

# THE IRON AGE

Established 1855

New York, May 8, 1913

Vol. 91: No. 19

## Fire Protection at Lodge & Shipley Plant

How the Works Are Divided into Districts  
Equipped with Fire-Fighting Apparatus  
for the Use of Brigades of Employees

—BY HENRY M. WOOD, CINCINNATI, OHIO—

Improvements in a manufacturer's product as made from time to time by progressive builders are usually promptly seen and appreciated. There are, however, other points of value to customers which do not show in the product itself; and among these are the taking of all precautions to insure not only a continued output of the present product so that orders can be promptly filled,

as are not found in most shops. A modern and strictly fireproof pattern storage warehouse of three stories and basement, brick and reinforced concrete construction, with wire glass windows, insures safety of the patterns. Fireproof vaults hold the drawings. A complete automatic sprinkler system of the most up-to-date type has been installed throughout the plant, supplemented with various



Fig. 1—Automatic Sprinklers Under Roof; Ajax Engine in Foreground

but also to make sure that the records and patterns of former designs shall be readily and promptly available for supplying repairs for existing machines.

To protect itself and its customers against loss and delay by fire, the Lodge & Shipley Machine Tool Company, Cincinnati, has recently completed elaborate improvements in the way of safeguards against fire such

hand appliances and an efficiently organized fire department.

These improvements insure a stability of output and a safety of old records which is of much importance, both to the company and to the users of its lathes. A lower insurance rate and greater safety to employees are added advantages of such safeguards, although in



Fig. 2—Rear of the Lodge & Shipley Machine Tool Company's Plant

this plant the single-story construction with clear aisles and numerous exits of itself practically eliminates danger to life.

The relative locations of most of the principal buildings are as illustrated in the rear view of the plant given in Fig. 2. Most of the machine work and assembling is done in the long building at the left, designated as Shop No. 1; this is a single-story monitor-type-roof brick building 90 x 810 ft. The general offices and drafting rooms are in the far end of Shop No. 1, and under that portion of the building only is a basement locker room and wash room for the shop force. Shop No. 2 is the two story brick building at the extreme right. The carpenter shop is in the center, and back of it are the receiving department, steel shed and pattern storage building. The supply tank for the sprinkler system is located at about the center of the works.

A blue-print fire map carefully drawn to scale shows the locations of all buildings, hose houses, hydrants, hand extinguishers and sand pails. This is posted near the time recorders, where all workmen may see it. Each member of the fire brigade has studied this chart diligently and knows the location of each piece of apparatus. On the walls in the office—where the headquarters of the fire protection system are located—are more carefully worked out drawings showing the plant both in perspective and in plan view. These drawings are colored and show pipe mains and other detailed information not given on the blue print.

#### Sprinkler System

All parts of the factory are protected by automatic sprinklers supplied from the 75,000-gal. storage tank seen in Fig. 2. One of the shut-off valves for the sprinkler system, also hydrant connected to city mains, appear in the foreground of this same illustration. The shut-off valves make it possible to cut out the sprinkler system in case of necessity, such as the accidental discharge of one of the sprinklers or for making repairs or alterations. A drain pipe is provided for emptying the water from the sprinkler system after the supply tank has been shut off.

Pipes are carried along under the roof of each building and fitted with sprinkler heads at frequent intervals. These can be seen in Fig. 1. The sprinkler heads open upward, thus taking care of ceiling fires and also reducing the liability of accidental discharge.

#### Auxiliary Apparatus

Located at easily accessible points throughout the plant are fifty-four hand extinguishers. One of these may be seen just below the alarm box in Fig. 3. Three Ajax chemical engines are provided; one in the No. 1 machine shop, one in the No. 2 shop and one in the cut-off shed. One of these is shown in the foreground of Fig. 2. As sand is very serviceable for fighting paint fire, several fire pails (see Fig. 3) filled with sand are hung in the paint shop. These pails are painted bright red, and have rounded bottoms so that they are not likely to be used for other purposes.

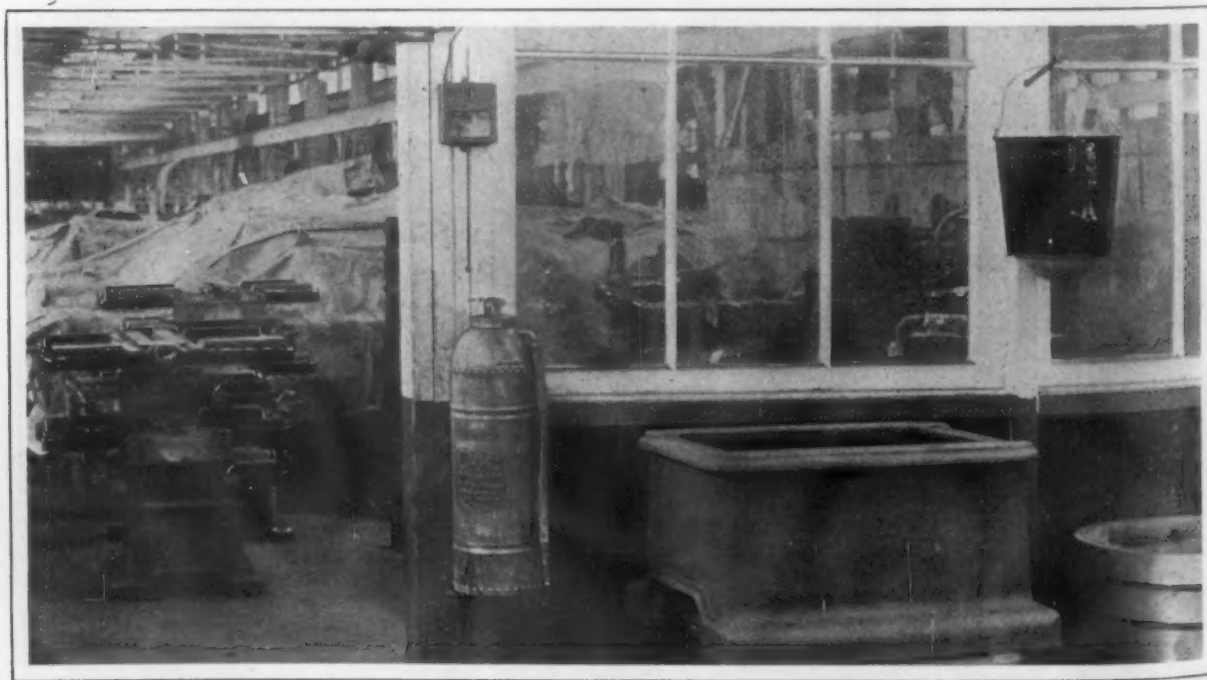


Fig. 3—Alarm Box, Sand Pail and Hand Extinguisher

There are five hose houses distributed about the premises. Each contains 100 ft. of cotton rubber-lined underwriter hose coupled to hydrant with playpipe attached; 100 ft. extra hose on shelf; two axes; two bars; four spanners; two extra underwriter playpipes; two ladder straps; one nozzle holder; one lantern ready for use; one wrench on hydrant and one spare wrench. Fig. 4 illustrates one of these hose houses. In addition there are several stand pipes inside the factory building, as shown in Fig. 5, with hose connected and 100 ft. of extra hose on the rack.

#### Organization of the Fire Brigade

Elaborate fire-fighting equipment will prove of small value if careful preparation is not made to insure that the apparatus shall be efficiently utilized. To that end the formation and training of the factory fire brigade is a prime requisite.

The shop superintendent is chief of the brigade, as this position requires an executive thoroughly familiar with all buildings and details of the fire fighting apparatus, whose regular duties require his presence at the plant the greater part of the time, and whose authority will be unquestioned. The other general officers are two assistant chiefs and a marshal. Each company has its own captain.

There are five fire companies, one for each hose house, and immediately upon the sounding of an alarm each

of gongs so located that the call will be heard in all portions of the works.

The fire alarm signal is ten blows on the bell, followed by the number of the district from which the alarm is turned in. These ten blows and the district number are repeated in succession until the glass is replaced in the box from which the call was turned in. The alarm will ring throughout the entire plant no matter from which station the alarm is turned in.

The plant has been divided into five districts, to correspond with the number of hose houses. District No. 1 is controlled by hose house No. 1; District No. 2 by hose house No. 2, and so on.

#### Fire Drill

At irregular intervals and at no fixed time of day, test alarms are turned in from various boxes. These drills train the men in promptly responding to the alarm, and afford them practice in quickly reaching their respective stations. The apparatus is run out just as it would be in the case of an actual fire. This drills the men in handling the hose and other pieces of the equipment. High efficiency of the fire brigade is maintained by frequent drills and by insisting that the men take them seriously as if there were an actual fire.

As the shop is of single-story construction and the workmen are never at all crowded, the numerous exits are ample for quickly emptying the buildings in case of

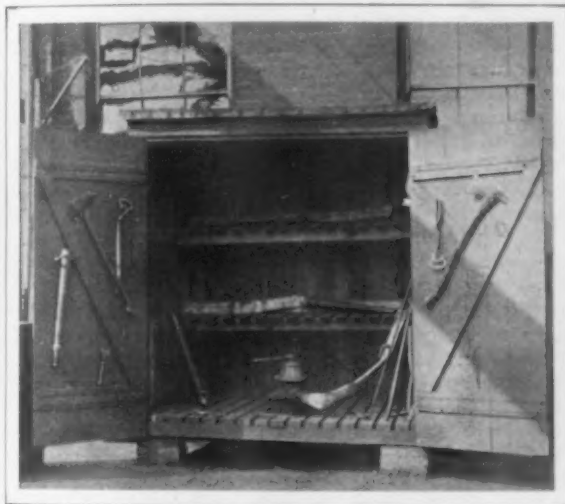


Fig. 4—Hose House with Its Equipment

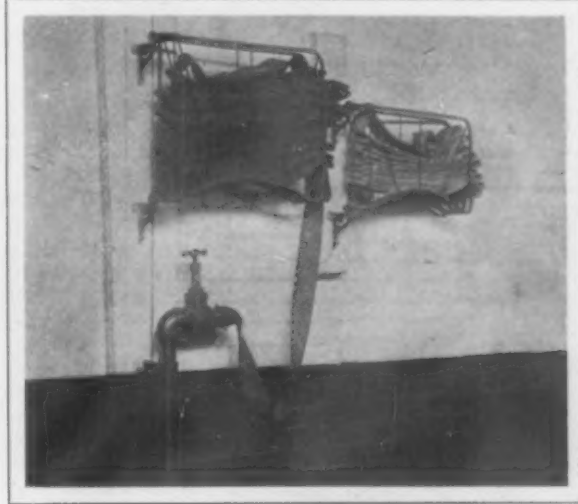


Fig. 5—Stand Pipe Inside of Building

company must take its station at its own hose house. To each member of the company specific work has been assigned. The members of each company are chosen from the workmen whose machines are closely adjoining its particular hose house. Members of the fire companies are selected for judgment and self-possession in cases of emergency, agility and strength.

In addition there is a ladder corps and a salvage corps. These two latter companies report immediately to the hose house of the district from which an alarm is turned in. The duty of the salvage corps is to guard against damage by the chemicals and water used in fighting a fire. Tarpaulins are provided for covering stock and equipment that cannot be moved. The salvage corps is trained to save goods in process, machinery, stock, books, records, etc. A shop fire department fully trained and equipped for prompt action has great advantages over the city fire department in being thoroughly acquainted with the shop geography and in being almost instantly on the ground.

#### Sounding the Alarm

Nineteen alarm boxes are located throughout the plant; one of these call boxes is illustrated in Fig. 3. To turn in an alarm it is only necessary to take the small hammer attached to the box and break the glass; the breaking of the glass permits a finger to fall into a mercury cup, thus completing an electric circuit and automatically ringing the fire alarm on the shop auto-call. There is also connection with the city fire department. The auto-call system is installed throughout the plant, with a number

fire, so that a fire exit drill is unnecessary. The greater part of the training of the men in the fire companies is necessarily obtained by practice drills and by oral instruction. In addition each member of the organization is given the brief written outline of general duties quoted below.

The captain of each company shall make it his duty once a week to inspect the equipment of the hose house, in order that he may become perfectly familiar with the equipment and have everything in readiness for an emergency call. Each captain shall assign a certain duty for each man of his company, instruct him in the work and let it be his regular duty at all times. This plan will avoid confusion and loss of time at a call. The captain once a week should interview each member of his company, and remind him as a member of the fire brigade to be always on the alert for an alarm. He should have the man nearest to a bell station train himself to listen to the bell.

When answering a call, it has been the usual habit to run the hose out its entire length in some one direction. This should be corrected; every man should be at his post, run the hose a short way, and then find the location of the fire before proceeding. The members of the company must be thoroughly familiar with the handling of the hose—taking off nozzle, coupling on an additional length, and using the right wrench at the right time. Each captain will be held responsible for his hose station to make sure that in the event of a fire no part of the equipment may be missing. He must report at once any time the equipment is not complete, or out of order.



Cleanliness is one of the first requisites in guarding against fire. Several laborers are continuously employed in sweeping up. All departments are kept clean; the sweeping and all waste material are removed every night. Sheet iron cans are provided into which any waste material may be placed, and these receptacles are kept covered. Waste paper from the office is daily baled and sold. A baling press installed for this work has proved a profitable investment, in addition to keeping the waste paper all in proper order.

A weekly inspection is made of all fire protective apparatus. This is done by the shop inspector, who makes a written report of existing conditions of the equipment just as found on his rounds. The primary purpose of these reports is to inform the executives of the condition of the fire equipment, but it is also required that the weekly reports be kept on file and open to any inspectors sent by the insurance companies.

Some of the more important items of information which the weekly report contains are a record of the condition of all valves and hydrants; inventory of equipment in each of the hose houses; condition and location of fire pails; water pressure; general cleanliness of the plant. The inspector also sees that none of the yard laborers place castings or other obstructions where they might obstruct passages to the hose houses or prevent the doors being opened. The night watchman makes periodic rounds of the works and is on the lookout for fire, but is not expected to render any report on the condition of the apparatus.

### Burner for Use in Starting Kerosene Engines

A special oil burner outfit for heating the combustion chambers of crude or kerosene oil engines for the purpose of starting them has been brought out by the Hauck Mfg. Company, 140 Livingston street, Brooklyn, N. Y. The supply of oil is stored in the large tank, and compressed air at a pressure of from 10 to 100 lb. is led into the horizontal pipe at the left. Part of the air enters the tank to force the oil out through the pipe at the right into the burner, while the remainder of the air passes directly through the horizontal pipe into the burner, where it mixes with the oil. The burner used is of a special atomizing type. There is a small vent cock on the top of the tank which is opened to exhaust the air, when the tank is being filled. When compressed

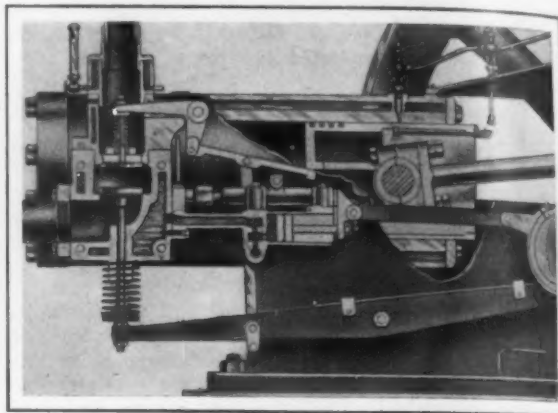
A Special Oil Burner Outfit for Heating the Combustion Chambers of Crude Oil or Kerosene Engines Prior to Starting Them

air is not available a hand pump can be used to force the air required into the tank. Three sizes of tank, having capacities of 5, 10 and 12 gal. respectively, are made.

**The Alabama Iron Company.**—The successor to the Alabama Consolidated Coal & Iron Company, the reorganization of which is now under way, will be known as the Alabama Iron Company. Berkeley Williams, Baltimore, has been made temporary president and H. W. Coffin, Birmingham, Ala., temporary vice-president. Formal transfer of the property has been made by H. W. Coffin, trustee in bankruptcy. The permanent organization of the new company will be effected soon. C. P. Ludwig, general manager of the Alabama Consolidated Coal & Iron Company, has tendered his resignation, effective May 31.

### Western Gas Engine with Improved Igniter

The Western Gas Engine Corporation, Los Angeles, Cal., has brought out an improved type of igniter for its line of internal combustion engines. It is of the make-and-break type and is operated by the movement of the pump cross-



A Portion of an Internal Combustion Engine Capable of Burning All Kinds of Liquid Fuel Showing a New Type of Igniter

head. If it becomes necessary to remove the igniter to renew the electrodes, it is done by unscrewing two nuts.

In the accompanying engraving, a portion of the engine is shown broken away to indicate the operation of the various parts. As the eccentric rod moves back and forth, it operates the circulating water pump at the left of the engine base, and the fuel pump to the left of the latter. This draws fuel from the supply tank and discharges it into a secondary reservoir in which the supply is kept at a constant level. The level is shown by the gauge at the left of the vertical pipe, the overflow being returned to the main tank. On the outward stroke, the cross-head engages a hook on the oblique rod and lever mechanism shown and this serves to open the inlet valve, thus permitting the suction of the outgoing piston to draw in a charge of fuel, air and water vapor, the amount of fuel passing into the cylinder being regulated. The exhaust valve is operated by a cam on the eccentric and engages the stem of the exhaust valve. A rod on the upper side of this lever, which is not clearly shown, releases the compression for starting only. When the speed of the engine is too fast, the governor on the flywheel hub acts by holding the exhaust valve open and preventing the hook on the oblique rod from being engaged by the cross-head. In this way, the inlet valve is kept closed and no fuel is used.

The igniter trip is engaged by a rod attached to the cross-head which is not shown and the point of ignition can be readily adjusted while the engine is running. There are two ignition points, and these are controlled by turning a handle on the cross-head. One of these gives a late spark which is used in starting only, the handle being turned to the advanced spark position as soon as the engine has been brought up to speed.

The piston is of the long trunk type. The wrist pin is inserted and fastened in place from the front end, an arrangement which, it is pointed out, does away with holes through the piston walls and at the same time renders it easy to remove the wrist pin when it becomes necessary to turn it down.

David Werner Amram has been appointed referee in bankruptcy in the matter of Jacob K. Dimmick, M. Rea Gano and Frederick D. Dimmick, individually and as co-partners, trading as J. K. Dimmick & Co., coal, iron and coke merchants, Land Title Building, Philadelphia, Pa. The first meeting of creditors will be held May 14 at the referee's office, Real Estate Trust Building, Philadelphia.

The Ayer & Lord Tie Company, Railway Exchange Building, Chicago, has received an order for 5750 yds. of its blocks for flooring the new machine shop of the Detroit United Railway Company, Detroit, Mich. The order came through the W. C. Wood Company, engineer and contractor, Detroit.



## A New Type of Non-Pulsating Pump

Specially Shaped Cams Actuating the Cross-Heads a Feature of the Design

A contract has recently been placed by the water works department of the city of Cleveland, with the Luitwieler Pumping Engine Company, Rochester, N. Y., for three motor-driven 500-gal. pumps. These pumps are constructed according to a system whereby it is pointed out that the dead center has been eliminated and a non-pulsating reciprocating pump secured. Cams are used in place of cranks to transform the rotary motion of the source of power into a reciprocating movement for the cross-head. They are designed to give a uniform speed of the cross-heads and therefore a steady delivery of water. Fig. 1 is a view of one of the pumps supplied to the city of Cleveland, while the arrangement of the cams and their followers in a triplex pump is shown in Fig. 2.

The cams are placed 120 deg. apart on a straight shaft. The cams and the shaft are balanced, and this, in connection with the even flow of water, it is emphasized, enables a high speed to be maintained. Roller followers on the cams actuate the cross-heads. The pump is double acting, the work performed by the cams is proved uniform throughout the cycle, and the pressures on the opposite sides of the bearings are equal. This design, it is pointed out, results in making the camshaft a floating one, and it is possible to use 3 3/16-in. steel for the shaft. In tests a triplex pump, it is reported, has operated under full load, standing upon a pair of saw horses without any vibration being apparent and an efficiency as high as 87.5 per cent. has been developed with motor-driven pumps.

In the duplex pump, the two cams are seated oppositely upon one shaft and transmit the power through sliding yokes, the friction being relieved by rollers. These cams are designed so that each lifts the load through slightly more than a full half revolution, the overlap permitting the load to trail off gradually from one cam, while the succeeding cam gradually assumes it. The rise of the cam is

In addition to the motor-driven pump, the company is prepared to furnish gasoline or steam engine driven units in both vertical and horizontal types, and a gasoline-driven fire engine has also been developed in which triplex double-acting pumps are used. There are three of these pumps which have a capacity of 880 gal. per min. at 100 r.p.m. In tests of this apparatus a net efficiency of 85 per cent., it is stated, has been secured.

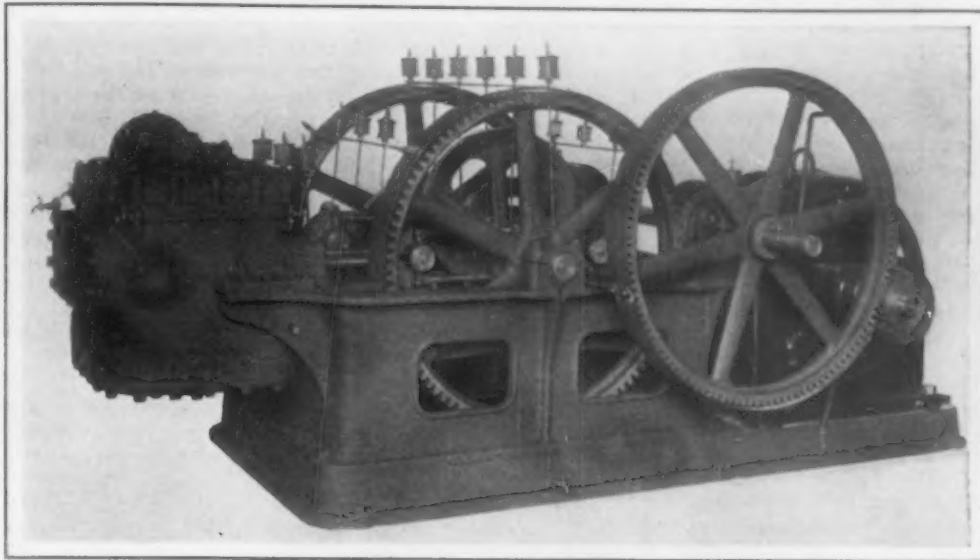


Fig. 1—A 500-Gal. Non-Pulsating Pump in Which Cams are Employed to Transform the Rotary Motion of the Driving Member into a Reciprocating Movement

### Contracts for the Australian Steel Plant

Several months ago representatives of the Broken Hill Proprietary Company, Ltd., of Australia, were in this country securing data and figures on the erection of a blast furnace, open-hearth steel plant and structural steel and merchant bar mills, to be built in New South Wales. Recently the company has placed contracts for the erection of a blast furnace, structural and merchant mills. That for the steel plant is still in abeyance. The contract for the blast furnace was placed with the William B. Pollock Company, Youngstown, Ohio, and the Mesta Machine Company, Pittsburgh, received an order for three high-speed blowing engines. These will be exact duplicates of several recently furnished by the Mesta Machine Company to the Shenango Furnace Company at Sharpville, Pa. They will have 44-in. steam cylinders, 84-in. draw heads, 50-in. stroke and are built for a maximum pressure of 30 lb. and a maximum speed of 80 r.p.m. The engines will be equipped with the new air valves recently put on the market by the Mesta Machine Company, these being an important factor in the award. Work on the construction of the engines has already started at West Homestead, Pa., and they are expected to be finished and shipped in the latter part of this year. The contract for the engines was secured by the Mesta Machine Company in close competition with English, German and other foreign engine builders. The work on the new plant is in charge of David Baker, who went from Philadelphia in February to become engineer of construction and general manager.

The Van Dorn Electrical Tool Company, Cleveland, Ohio, has been incorporated with a capital stock of \$300,000 to manufacture the line of portable electrically driven drills and reamers now made by the Van Dorn & Dutton Company. The latter company also manufactures gears, its electrically driven tools being a side line. Both branches of the company's business have grown to such an extent that it decided to have separate corporations to carry on the two lines. They will be closely allied but will be under separate management.

Eisenerz, a town in the Erzberg district of Austria, has the distinction of having conducted iron mining operations for the past 1200 years. To commemorate this a series of fêtes will be held in the town from June 22 to 29.

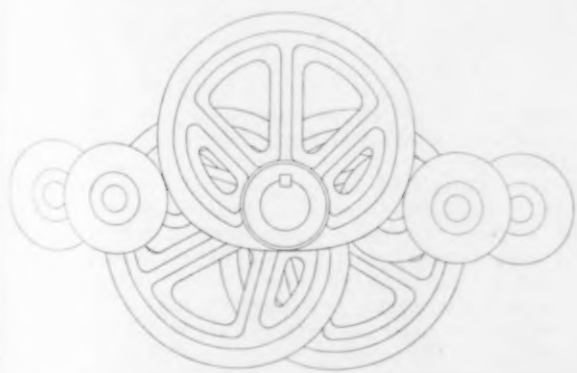


Fig. 2—Drawing Showing the Arrangement of the Cams and Followers in a Triplex Pump

even and constant between the intervals of overlap and carries the water load forward without acceleration at an even speed.

# The Case of the Chilled Cast Iron Car Wheel

Its Manufacturers Consider That the Percentage of Flange Breaks Is Small Considering the Service Conditions—A Record of Improvement

—BY GEORGE W. LYNDON\*

Our purpose is to set forth facts with reference to an article published in *The Iron Age* under date of March 6, page 588, under the caption, "An Increase in Number of Car Wheel Failures." The article referred to is based upon accident bulletins of the Interstate Commerce Commission. After summarizing the derailments due to broken flanges and burst wheels, it says:

"The necessity of bringing the quality of the chilled iron car wheel to a proper basis is emphasized today as it has never been, and the makers and users should get together and try to find means of improving the quality of car wheels to make them equal to present service conditions."

Apparently the writer does not know that the Association of Manufacturers of Chilled Car Wheels, representing 95 per cent. of the wheels manufactured in the United States, and the Master Car Builders' Standing Committee on Car Wheels have been closely associated since the year 1909 for the express purpose of improving the quality of the chilled iron wheel. Previous to the year 1909, individual wheel makers had made improvement in their patterns and product; but no concerted action had been taken until the year 1909, when standard wheels for the three classes of cars of 30, 40 and 50 tons capacity were submitted by the manufacturers and approved by the Master Car Builders. Before these three standards were adopted there were as many patterns as there were manufacturers, and many railroads had standard patterns of their own. The standards recommended were not in general use until the year 1911, because the Master Car Builders gave the manufacturers a sufficient time to adjust their equipment to the new standards.

## Wheel Failures and Harder Service Conditions

In analyzing the derailments caused by broken flanges and burst wheels for the purpose of determining what progress has been made in the quality of the chilled iron wheel, we must consider the dates the wheels were cast, and not charge all the failures during the year 1912 against the product of that year. This is the only proper basis upon which to proceed.

In determining the percentages of derailments of cars due to broken flanges and broken wheels, the number of failures in any one period cannot be consistently compared with another unless the number of wheels in service is considered; and it is manifestly unfair to state that in the period 1902-4 there were 1070 derailments, while during the period 1910-12 there were 1827, and figure an increase of 70 per cent., as was done by the writer. In 1902 there were 1,500,000 freight cars in service, representing 12,000,000 wheels; in 1910 there were 2,133,000 freight cars in service, representing 17,068,248 wheels—an increase of 40 per cent. in the number of wheels in service; and this increase represents wheels serving under heavy capacity cars.

The chilled iron car wheel manufacturers, in conjunction with the Master Car Builders, have made greater progress in the chilled iron wheel industry since the year

of 1909 than has ever been made; and when consideration is given to the vast increases in car capacity, and the resultant increases in rail and axle during the last decade, and the slight increase in the weight of the wheel, it will be found that the chilled iron wheel has not only met every condition of service imposed for the past 52 years, but the record will show that the derailments due to broken flanges and burst wheels are actually decreasing. Note the following table showing the changes that have been made in developing the 10-ton car to the 50-ton car:

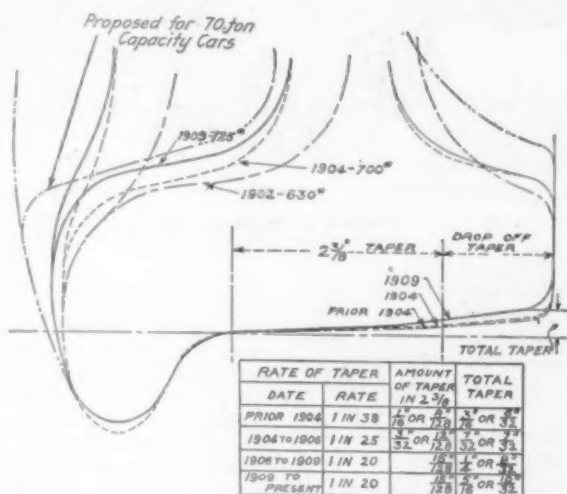
Weight increase in car capacity..... 400 per cent.  
Weight increase in rail..... 100 per cent.  
Weight increase in axle..... 149 per cent.  
Weight increase in chilled iron wheel. 38 per cent.

## Flange Improvements

One part of the chilled iron wheel that has not received due consideration is the flange. In an editorial in *Harper's Weekly*, *Industrial Series*, December 28, 1912, appears the following:

"It is a curious fact that in this matter of flanges the cars of to-day are no better off than were the cars that carried soldiers and supplies to the battle fields of the Civil War."

This condition is not because the wheel makers have not been fully alive to the situation, but on account of the fact that they have been restricted in improvements because of the supposed limits of track clearance. The accompanying diagram will show such improvements in the flange as have been made since 1904:



Changes Made in Flange and Tread Sections of Car Wheels Since 1904

show such improvements in the flange as have been made since 1904:

Reference to the illustration will show a slight increase of metal in the back of the flange in 1904, as the weight of the wheel increased from 630 to 700 lb. It will also show that during 1909 a further increase was made, starting at a point slightly below the base line and extending around the flange and back of the tread, producing an increase in tread thickness and increasing the weight to 725 lb. These slight changes, together with a reduction in the height from 1½ in. to 1 in., are the only improvements made in the flange, and it must be remembered that the capacity of the cars has increased from 10 tons to 50 tons. This was all we could get, but not as much of an increase as we wished to make in order to increase the factor of safety. We are still trying to improve the flange, but cannot go further until such a time as the railroads will approve of a design similar to that shown for a flange for 140,000 lb. capacity cars. When this is done flange failures will be reduced to a minimum.

The flange of the wheel exercises the important function of guiding the trucks and in going around curves it is the flange that takes up the lateral thrusts of the car by being forced against the rail, and the contact between wheel and rail produces wear in both. A flange, therefore, does not improve in strength with age, and the longer it is used the more the wear, and the thinner and weaker it becomes. The imperative necessity of careful inspection follows, so that a wheel may not be allowed to wear in the flange beyond the condemning limit.

## Flange Breaks Analyzed

Many times in looking for the cause of a derailment a wheel will be found with a broken or chipped flange, and

\*Secretary Association of Manufacturers of Chilled Car Wheels, 1214 McCormick Building, Chicago.

this cause is readily assigned, whereas, as a matter of fact, the flange may have been chipped or broken after it left the track, or through poor track, faulty truck construction, etc. We know of cases where a broken flange was reported as the cause of a derailment and upon investigation we have found that the flange had been worn beyond the condemning limit. Many derailments are reported to the Interstate Commerce Commission caused by sharp flanges climbing the rail in going around curves, or passing crossings, frogs or switches.

Examining the record of broken flanges for the year 1912, as compiled from the Interstate Commerce Commission reports, we have the following:

Year cast.	Broken flanges.	Year cast.	Broken flanges.
1888.....	2	1909.....	13
1899.....	9	1910.....	16
1900.....	4	1911.....	2
1901.....	7	1912.....	2
1902.....	12		
1903.....	10		170
1904.....	8	No record.....	457
1905.....	16		
1906.....	23	Total reported.....	627
1907.....	34	Percentage reported.....	27
1908.....	12		

As will be seen, we have a record of 170 wheels out of a total of 627 reported broken, or 27 per cent. The service is from one to twenty-four years and the average life of all the 170 wheels is over six years. As a flange is at its best when first put into service, it will be interesting to note the comparatively few failures for wheels cast in the years 1910-11-12.

The total breakages of flanges in the three years amounted to 20 wheels. The report shows that during the year 1910 there were 16 breakages, only 2 in 1911 and 2 in 1912. As we only have a record of 27 per cent. of the broken flanges during this period, and on this record shows 16 wheels were cast in 1910, it would be reasonably fair to assume that the remainder of the wheels (if tabulation could be made) would bear the same proportion of breakages. Therefore we can assume that if we had a complete record, there would have been broken in the year 1910 approximately 60 wheels. During the year 1910 there were in service over 2,000,000 freight cars and there were running over 16,000,000 chilled iron wheels, and this would represent one wheel broken for every 266,000 wheels in service. If we take the total breakages, which are reported as 627, and consider the number of wheels running, we will find that there is one breakage for every 25,000 wheels in service and the broken flange wheels which we have tabulated from the Interstate Commerce Commission reports show an average of 6½ years' service. Surely this is not an alarming condition when we take into consideration that a very large percentage of those broken were of the old design and plainly show abuse due to sticking brakes and excessive wear.

#### The Record of Broken Wheels

We will now analyze the report of broken wheels. Our record, as compiled from the Interstate Commerce Commission report, shows the detail of 109 broken wheels as to years cast, name of maker, etc. There were 229 breakages for which we could obtain no record. An analysis of the 109 wheels reported is as follows:

Year cast.	Broken wheels.	Year cast.	Broken wheels.
1889.....	1	1909.....	9
1892.....	1	1910.....	14
1897.....	1	1911.....	10
1899.....	1	1912.....	7
1900.....	3		
1901.....	3		109
1902.....	8	Broken and loose tires on	
1903.....	9	engine drivers.....	19
1904.....	4	No record.....	229
1905.....	6		
1906.....	12	Total.....	357
1907.....	13	Percentage reported.....	33
1908.....	5		

It will be observed that the broken wheels, like the broken flanges, are distributed over a period of years, starting with the year 1889, and the average service of all wheels broken is over six years. The cause assigned for the breakage of 52 wheels out of the 109 reported by the

Interstate Commerce Commission is "brakes sticking."

Broken wheels are the result of temperature stresses arising from brake friction and show conclusively that the metal has not been proportioned to the stress. In designing any structure, a unit of material is used to resist a unit of stress, and when all service conditions are known it is a simple matter to proportion the metal to fully meet them. If wheels were designed to meet the most severe service conditions instead of average conditions, there would be no broken wheels.

Fifty per cent. of the broken wheels were caused by "brakes sticking" and 90 per cent. of the broken wheels occurred in the mountainous regions of the East and West, where the maximum of brake resistance is required in descending grades.

#### Breaks from Improper Use

A large number of these wheels plainly show improper usage. For example:

A 625-lb. wheel designed for a car having a light weight of 28,000 lb., as required in the M. C. B. standards, would be called upon to resist a normal heat stress resulting from 19,600 lb. brake pressure when the train is braked at 70 per cent. of the light weight of the car.

A 625-lb. wheel for a car having a light weight of 50,000 lb. braked at 80 per cent. would have to resist an abnormal stress of 40,000 lb. brake pressure, or 150 per cent. greater stress demanded from the same weight of wheel.

It is no uncommon thing to find 625-lb. wheels under cars weighing from 45,000 to 50,000 lb.; in fact, many 60,000 lb. capacity cars weigh light more than 100,000 lb. capacity cars. Still, the wheels designed for 100,000 lb. capacity cars weigh 100 lb. more than those designed for 60,000 lb. capacity cars, and this additional metal is distributed in the plates of the wheel, which increases the strength and furnishes greater resistance to sticking brakes. The heat developed by excessive brake application is what causes wheels to break.

The Master Car Builders in their 1912 Proceedings recognized the question of establishing the maximum braking power as well as gross load for each design of wheel, and called particular attention to the trouble experienced in using 625-lb. wheels under 60,000 lb. capacity cars, having tare weight of 40,000 lb. to 70,000 lb., such as refrigerator cars, etc., and if their recommendations are followed broken wheels will be practically eliminated.

If we take the entire number of chilled iron wheels broken during the year 1912 and base these breakages upon the number of wheels in service, we will find there is, comparatively, one broken wheel for every 50,000 wheels in service.

The commerce of the country is dependent upon the chilled iron car wheel. It has successfully resisted the attacks of over half a century. It is the standard wheel for rail-borne traffic, and its universal use is an acknowledgment of its efficiency. It possesses the ideal structural advantages of hard tread, soft plates and soft hub, and each part of the wheel is so well fitted for the service demanded that it is no wonder that it has survived such a long period of use. It carries the car structure and contents all over the country, and because an occasional wheel breaks it does not follow that the wheel is to blame, because anything can be broken by abuse, and no one will deny that the chilled iron wheel has a tremendous burden to bear. The chilled iron wheel now carries over 500,000,000 tons one mile each year.

[The existence of the Association of Manufacturers of Chilled Car Wheels and its conference relations with the Master Car Builders were well known to the writer of the article referred to at the beginning by Mr. Lyndon. The necessity for some action that has not yet resulted from the joint efforts of the car wheel manufacturers and the railroads is as pointedly indicated in Mr. Lyndon's comments as in the original article.—EDITOR THE IRON AGE.]

The Gadsden Pipe Company was organized in Birmingham, Ala., last week, and will build a soil pipe plant at Gadsden, Ala., to replace the one that was destroyed by fire some months ago. It is expected to have the new foundry ready for operation in the fall. Otto Agricola, Gadsden, has been elected president, William M. Byrd, Birmingham, vice-president, and H. Hammond, Birmingham, secretary-treasurer.



The Iron Flasks Which Formed a Barrier and Saved the Machine Shops



## Rehabilitation from the Dayton Flood

What Happened in the Plant of the Platt Iron Works—Motors Dried in a Vacuum and Other Interesting Restoration Work

—BY K. G. MARTIN\*

To the outside world the Dayton flood is a matter of history, but to those who went through this terrible ordeal it is still a very near and vital thing and constitutes a chapter in the lives of all those who experienced it that will never be forgotten. The waters have subsided but they left behind a city covered with mud and debris. Many homes were wrecked and ruined and many factories and plants damaged and their production facilities temporarily paralyzed.

It is this latter phase of the disaster—the overwhelmed plants and the manner of their rehabilitation—that com-

mands a large share of the engineers' attention at the present moment, and with this thought in mind I shall describe the way in which the Platt Iron Works was put back into service and was operating at overload capacity within three weeks of the day that the first man reached the works after the flood.

The Platt Iron Works occupies 16 acres on the north bank of the Mad River, just at the end of the Keowee street bridge in North Dayton, in the very heart of what became the "flood district." Due to the tremendous rainfall which began on Easter Sunday, the rivers had reached a high but not particularly alarming stage by Monday evening. At 4:30 o'clock on Tuesday morning, March 25,

\*Platt Iron Works Company, Dayton, Ohio.



The East Bay of the Foundry Showing High Water Marks and Scouring Action of the Sand

the day engineer of the plant was awakened by a neighbor and told that the water was trickling over the levees and coming faster every minute. Making what hasty provisions he could for the safety of his home he proceeded immediately to the works, advised the night engineer and the watchmen of conditions and blew the whistle, blew it steadily, wide open, until its great bellowing was heard, in the quiet of the dawn, five miles away. It was the first warning that the sleeping city had of its approaching fate, but few at first realized its significance.

There were those who did, however, notably the watchmen and engineers of other plants, and soon whistles were hooting their warning in every direction. By this time the water was coming in a steady stream and was flowing into the works, not only over its own protecting concrete levees, but down from the north where the earthen dikes were beginning to crumble under the terrible onslaught of the now raging Mad River, and the men at the plant had to run for their lives. Another man who arrived at this time entered the machine shops and worked in swirling icy water up to his waist and saved over 100,000 card

and three candles with which he improvised a crude stove and here he finished his store of provisions, which had consisted of an apple and an orange. He was rescued the next morning in a boat—and the following night reported for duty at the plant! Such is the spirit of the men and women of Dayton!

#### How the First Cleaning Up Was Started

On Friday afternoon, March 28, the first man, the manager of the steam and power pump department, reached the plant on horseback, made preliminary surveys of the work to be done and started such men as came later in the day at cleaning up the boiler room and power plant and by Saturday morning steam was up. This same day, seeing that many of the men would have to work long hours in water and mud, the surrounding country was scoured for rubber boots and 60 pairs were obtained, 100 pairs more being gathered in next day.

Sunday 120 scrapers, like snow scrapers or pushers, were made to clean those sections of floor space that were encumbered with drift wood and wreckage. Owing to



The Pattern Shop Three Weeks After Having Been Completely Submerged

records before he was forced to climb up into the structure of the building and make his way to the roof.

He saw from that point of vantage an appalling sight, 4 sq. mi. of rushing water filled with trees, houses and every conceivable form and kind of wreckage. Directly opposite the plant a whole section of the dike had been cut clean out and the water had swept before it lumber yards, brick and wooden houses and sheds, railroad cars, everything that came in its path.

The experience of this man, marooned on the roof of the machine shops, is typical of that which thousands of others went through. Around him was a surging flood, running 15 ft. deep and at terrific speed, absolutely cutting him off from all assistance. As the waters had risen he had climbed higher and higher and finally broke his way through the glass side of the saw-tooth roof. With a ladder and a piece of rope he made his way about and when that frightful Wednesday night came with its below freezing temperature, its rain and snow, and with the weird scene illuminated by the light of two whole squares in the center of the city in flames, he sought shelter and warmth.

Entering the shop again at a point above one of the three-storied stock rooms, he obtained some brass sheeting

the proximity of the river the plant received its full share, 8 in., of the entire 500,000 tons of silt and mud that were spread over the flooded area. By the time that the chief executive arrived on Monday, having traveled by practically every known means of conveyance, the whole work of rehabilitation was well under way.

#### Flasks and Patterns Carried Two Miles

Mud and refuse were piled on wheelbarrows and improvised hand cars in the machine shops, pattern shops, foundries, etc., run outside and loaded on flat cars, taken to a sluice-way built at the river edge, the whole mass liquefied and searched for tools and other articles of value and then washed down into the river. Tracks that had been washed out were relaid and this work extended to all parts of the plant. Fire hose lines were also laid throughout all the machine shops and the automatic and machine tools were thoroughly washed down over long periods until every particle of grit was removed.

Beside all this work many other activities were under way. Guards had been appointed to watch the outlying buildings while other men were sent down the river to recover or tag patterns, flasks and other property that had

been washed away, some of it having been carried two miles. The First Sanitary District, under the United States Sanitary Commission, had been established in the offices of the plant; and food, clothing and hospital supplies were being distributed. A field kitchen had been set up in a cleared space in the yard and here food and drink were prepared for and served to 1000 men for 10 days. Supplies had also been carried to the city water works, just across the river, and before they were put in operation water was furnished to the district from Platt deep well pumps located on the plant property.

#### Electric Motors Dried Under a Vacuum

By Tuesday 3000 shovels had been obtained and the shops and yards were all soon clear of mud. The machine tools were next carefully disassembled, each part wiped dry and oiled, put back in place and readjusted. The electric motors in the plant, numbering over 300, were next attended to. These included the various pump appliances and shafting motors, motors delivered for erecting with

the confusion and disorder existing in the pattern shop directly after the flood may be obtained by noting the high water marks, shown in black on the piping near the ceiling at the right in the illustration of this shop, and remembering that every object not securely fastened and that could float was swept about by the all-powerful current.

In the foundry building the same state of affairs existed, wooden flasks, rammers and sieves being in jumbled heaps, covered with mud and wreckage from outside. Everything had to be dug out, washed off and cleaned and restored to its proper place. No complete molds were destroyed, but one large pit casting that was still quite hot from the last pour was shattered as the water struck it. The floor and tracks had to be scraped and leveled up and the records and files duplicated. The bench molders suffered the most inconvenience, due to the confused state in which their equipment was left, but the scouring action of the churned-up sand and floating debris is best shown in the lighter appearance of the lower parts of the building col-



The South Bay of the Machine Shop Three Weeks After the Flood; High Water Mark Shown by Chalk Marks in Center Background

pumps on order, and all the motors that formed the individual drive for the various machine tools. Several large feed-water heaters were obtained from that department, lined with steam coils, a vacuum pump attached, the motors placed inside, and at a temperature so low that the windings and insulation were unaffected, every trace of water was boiled out and evaporated. The same scheme on a larger scale was employed in the case of the main generator so that electric light and power were at hand in the works within a short time.

In the pattern shop and pattern storage, work had been going steadily on. New benches and leveling tables had been built; new belts were obtained for the shafting; tools, gauges and clamps had been sorted out from the piles of stuff that had been left heaped about as the water drained off; new flooring was laid where it had been ripped or floated up; new windows were put in, new supplies of every sort were obtained and the whole place repainted. Patterns were carefully sorted out as they were found, those damaged were discarded and new ones built and those that were still in a good state of preservation were trued up and put back in storage. Some idea of

urns and the cupolas in the accompanying photograph of the east bay, where the pit and heavy casting is done.

The traveling cranes were used to good advantage in the foundries as well as in the machine shops in cleaning up. Piles were made of the material that had been floated from its proper place and the crane then carried the load to its original and proper position.

#### Heavy Iron Flasks Served as a Protecting Barrier

The view taken in the north yard looking toward the boiler shop gives an idea of the violence of the flood and the vast amount of wreckage that had to be dealt with. The line of heavy iron flasks at the right undoubtedly saved the machine shops, the shadow of which shows at the left, from a great deal of damage. They broke up many of the floating houses and formed a breakwater that shielded the shops from the impact of these heavy floating objects that would otherwise have rammed the plant like so many gigantic torpedoes.

The wooden flasks stored in another yard were scattered all over the flooded area, some being found two miles away, as stated. The plant stable was washed away with



the horses in it, hit a bridge, went to pieces, and only one horse was saved. By a freak of the flood another stable was carried down onto the property, stranded right side up, perfectly level and faced the right way. It was bought from the owner and is now in use.

It was essential that the various industries of the city be put back in working shape as rapidly as possible, so that men might be given employment and money put into circulation. Nowhere was this work done quicker or in a more systematic manner than at the Platt Iron Works, and the situation was looked at from a broad and economic viewpoint as well as with an eye to getting the plant back on a money-earning basis and completing the many orders on hand. The photographs tell the story at a glance, as they show the conditions existing on April 18, exactly three weeks after the first man entered the works.

Many of the employees are, of course, still devoting much of their time to getting their homes in shape again and many were working for a long time at general salvage work after the flood under orders of the military authorities. At present fully two-thirds of the men are back at work, although it will be some time yet before the full complement of 2500 men can be obtained. Such is the story of what one plant went through as a result of the Great Dayton Flood, and the energy and courage displayed in putting it back "on the map" in such short time speaks volumes for the organization.

## Welding Broken Iron Light Poles

An Interesting Application of the  
Oxy-acetylene Process at Dayton

The use oxy-acetylene welding machines can be put to was perhaps hardly better illustrated than by the results accomplished by the Dayton Welding Company, Dayton, Ohio, in rescuing lamp posts after the recent floods. The water in the downtown district varied from 12 to 16 ft. in depth on the main business streets, and the swift current carried with it a lot of debris which caused an almost incalculable damage. In the shopping district of Dayton the cluster lighting system is employed. Ornamental cast-iron poles, about 15 ft. in height, carried four to six electrically illuminated globes, and during the high water, over 160 of these were broken off about 18 in. above the ground, the breaks coming just above the cut-outs and fuse plug. These breaks were not caused by defective castings, but were due to heavy objects being thrown against the poles.

It was at first thought that new poles would have to be installed, and in addition to the initial cost of them, there would have been a heavy expense in taking up the concrete and resetting the new poles. Time was also a factor to be considered. When the Dayton Power & Light Company was first approached on welding the broken poles back into place, the proposition was turned down as not being feasible. The engineering department called attention to the fact that a perpendicular weld would have to be made, which is considered one of the most difficult departures in the art of welding. Not daunted by this statement, the Dayton Welding Company offered to

replace six poles, as a trial, and the successful results obtained the contract for the entire lot.

A special derrick, the frame of which consisted of 2-in. wrought pipe, was rigged up on the rear of a wagon. On the front of the truck was installed an acetylene generator, oxygen tanks, tools, etc. By means of the derrick the pole was raised to its original position, matched up to the old break, and both sides prepared for welding. The six poles subjected to the trial were put to a very severe test, and were found to be just as strong as a new pole. In fact, it was claimed that at the breaking point they were stronger than before, as a  $\frac{1}{8}$ -in. fillet was added on the outside.

With the one portable outfit and three men, six to seven poles were repaired each day, at a cost of less than half that of new poles. Considering the cost of removing the broken columns, resting new ones and replacing the concrete pavement, the saving effected would be hard to estimate. The illustrations show a pole that was welded, and all connections made and the light turned on in less than two hours' time.



Ready for Welding

## The Increased Export of Swedish Iron Ores

For some time negotiations have been carried on between the Swedish government and the Trafik-Aktiebolaget Grängesberg-Oxelösund with a view to altering the contract of 1907 between these parties, so as to enable the company to ship a larger quantity of ore than is now stipulated. An agreement has been reached, subject to the approval of the Swedish parliament. It has been proved that the iron ore deposits of the country are much more extensive than was thought a few years ago, thus reducing the possibility of danger to the Swedish iron industry from lack of ore supply. The adoption of the new agreement will result in a total increase of 31,000,000 tons of high-grade iron ore in the period of 1913-1932, or an average of nearly 1,600,000 tons per year. Because the mining company has already sold the entire production allowed by the previous agreement until 1920 and the greater portion until 1928, the effect of the new adjustment will not be important for some years. The available increase is but 300,000 tons this year and amounts to 900,000 tons in 1916. By further increments it becomes 1,900,000 tons in 1920 and remains at that figure in the following twelve years.



The Portable Welding Outfit and Derrick and Broken Pole Being Prepared for Welding

The first specifications for equipment for its new steel plant have been sent out by the Otis Steel Company, Cleveland, Ohio. These specifications are for four or five jobbing mills for light plates and heavy sheets. The company expects to send out other specifications shortly.

## Doing Business With the U. S. Navy

### Navy Business Is Desirable—Red Tape a Fiction—Inspection Not to Be Feared

—BY C. A. HARRINGTON.\*—

The annual appropriation for the navy made by Congress in recent years has averaged approximately \$130,000,000. A large proportion of this falls into the hands of establishments located within a radius of a few hundred miles from Washington, being expended for steel and iron and the products made therefrom, non-ferrous metal articles, lumber, rubber, etc. As there are many who do not thoroughly understand just what a large consumer and what an excellent customer the Navy Department is, and as there are many also who are not familiar with its mode of conducting business, it may perhaps be worth while to give a short description of the methods of purchase and inspection of material for the navy.

#### Prejudice Against Navy Business

At the beginning, it may be said that there seems to be a feeling on the part of many that navy business is undesirable, principally for two reasons: 1. On account of the so-called red tape connected with bidding. 2. The trouble, complications, losses, etc., caused by navy inspection. It is a strange fact that many concerns who have such feeling about government business have never had any real business dealings with the Navy Department, their fear being caused more by hearsay evidence. It is also a fact that such people, after having had one experience with the Navy Department and seeing what really simple and effective methods are used, usually endeavor to get more navy business. The only ones who actually fear navy methods are those who fear any kind of honest business, namely, unreliable manufacturers or merchants. It is hoped that this article will show just how simple and easy it is to deal with the Navy Department, whose methods are exactly like those used by any intelligent purchaser who assures himself as well as possible that he is getting just what he pays for.

The business of the Navy Department, like other departments of the National Government, is administered by a secretary under whom are various bureaus. The word "bureau" in itself is responsible for creating a wrong impression in the minds of many who usually associate with it the so-called government red tape and imagine that the bureau is presided over by an aristocratic officer of haughty and imperious demeanor in gold-striped clothing, and popularly styled a bureaucrat. In the same way that a large industrial enterprise has its sales, purchasing, engineering, technical, law, and other departments, the Navy Department has its various bureaus for the transaction of business.

#### The Principal Bureaus of the Department

So far as industrial enterprises are concerned, the principal bureaus of the Navy Department are the Bureau of Construction and Repair, which has charge of the design, construction and repair of ships and in general cognizance of all material entering into the hull and fittings of naval vessels; the Bureau of Steam Engineering, which has charge of the design, construction and repair and cognizance of the material entering into the machinery of naval vessels; the Bureau of Ordnance, which has charge of the design of armament and cognizance generally of material entering into the armor and armament of naval vessels; the Bureau of Yards and Docks, which is concerned principally with the various public works at navy yards, and the Bureau of Supplies and Accounts, non-technical, which is charged with accounting and the purchase and storing of supplies and also has cognizance of certain material, principally provisions.

All material used by the navy is grouped into 65 different classes, and is usually purchased according to various standard specifications which are issued in leaflet form. These specifications are in the main prepared by the technical bureaus having cognizance of the material, the ability to make the specifications naturally being with those who have familiarity with the use for which the

material is intended. The specifications are issued by the Bureau of Supplies and Accounts, and copies of any Navy Department specifications may be obtained by application to this bureau or to its purchasing representative, called the Purchasing Pay Officer, one of whom is located in each city where a navy yard is situated. In general, these detail specifications completely describe the material and the tests, if any, to which it is to be subjected upon inspection, so that prospective bidders know exactly the material upon which they are bidding.

#### How Purchases Are Made

Purchases are made either directly by the Bureau of Supplies and Accounts or by its representative previously mentioned, namely, the Purchasing Pay Officer, for the navy yard actually in the market. All important purchases are made by this bureau, which issues, for the purpose, so-called printed "schedules" which show the quantity of material desired, the specifications to which it must conform, details of delivery (that is, time and place of destination), and other necessary information. Proposed purchases are fully advertised. In addition to advertising, the bureau also sends out to interested parties an elaborate post card giving a list of material for which the department is in the market and the date on which bids will be opened. If there is any material on the post card list which a concern is interested in, the schedule in question may be secured upon application, and the firm or company is then in a position to submit its bid.

Purchases involving a small amount, less than \$500, and for which there is urgent need by a navy yard, are made by the Purchasing Pay Officer without advertisement. For example, if the navy yard, New York, is urgently in need of a certain small amount of pipe, proposals are mailed to various firms by the Purchasing Pay Officer, New York City. If interested, these people return the proposals with their bid thereon by the appointed time.

It will be seen, therefore, that to get Navy Department business it is really unnecessary to employ and maintain sales agents. All that is necessary is to keep in touch with the Bureau of Supplies and Accounts and the various purchasing pay officers.

Bidders have the right to be present when bids or proposals are opened. In all cases award is made to the lowest bidder and the contract signed; in practically all cases the lowest bid and the lowest actual bid are coincident. This is explained by the fact that in some cases, where alternate bids are submitted by one firm, award may be made to a bid not numerically the lowest but actually the lowest when price and quality and distinctive features of design are taken into consideration. In all such cases, however, the actual economy of the higher bid must be clearly apparent.

It will thus be seen from the foregoing that there is certainly no red tape connected with such methods, which are simple in the extreme. A man sitting in his office in Chicago can do navy business just as easily as a firm situated in the city of Washington. It will therefore now be interesting to examine into the features of navy inspection.

#### Navy Inspection

There are few industrial establishments of any importance who do not inspect in some way the material which they buy. Any that did not pursue such a policy would be short-lived because, it is to be regretted, with many people the standards of business honor are something entirely apart from the ordinarily accepted standards of life. Just why, therefore, there should be any objection to government inspection is not clearly understood, particularly as the provisions and manner of inspection are definitely outlined in advance and moreover as the contractor usually includes in his bid an ample margin to cover the cost of government inspection. It is a fact, however, that there are some manufacturers whose aim is to eliminate government inspection entirely, which is clearly impossible even if the government bought commercial quality in all cases, because there are many firms who would have to stand inspection to insure that they provided good commercial material.

It does not require much thought, on the part even of the most unthinking, to imagine that in many places on board naval vessels the best possible material is required.

\*Assistant naval constructor, United States Navy.

and that in some designs special material is needed. The subject does not admit of argument, since, as long as there are American ships of war, there will always be government inspection of the material which goes into those ships. Hence, let us examine further into the matter of inspection and endeavor to assure the reliable dealer that he not only has nothing to fear therefrom but, on the contrary, has something to gain.

All material for navy use is inspected either at the point of manufacture or at the navy yard destination. Some concerns, perhaps, imagine that they can escape inspection by dealing with the navy through jobbers. This is, of course, not so, as the contractors must in all cases state the place of manufacture and the name of the sub-contractor so that inspection may be made if required at the works of the manufacturer. Dealing through jobbers may consequently shift responsibility for rejected material, but does not eliminate inspection. Material inspected and rejected at a navy yard must be removed from the yard by the contractor, and if it cannot be disposed of in the vicinity involves a waste of transportation charges. In any event, greater loss is occasioned the contractor than if inspection occurred at the point of shipment. For this reason inspection at point of shipment is advantageous to the contractor.

For inspection at the works of a manufacturer various naval inspectors are maintained in different sections of the country by the bureaus for the inspection of material under their cognizance. As a general practice, material for the Bureau of Construction and Repair is inspected by a Naval Constructor designated either as an Inspector of Hull Material or as a Superintending Constructor; material for the Bureau of Ordnance is inspected by a line officer of the navy detailed as an Inspector of Ordnance; material for the Bureau of Steam Engineering and minor material for other bureaus is inspected by a line officer of the navy detailed as an Inspector of Engineering Material.

If inspection is to be at the point of shipment, the manufacturer is notified immediately by the inspector concerned, and is furnished with complete instructions regarding the inspection so that no trouble or complications result if the instructions are followed. Firms which are continually doing navy business usually make the details of inspection a routine procedure. One government contract for navy inspection or shipment should suffice for any concern to become familiar with inspection methods.

#### Advantages of Naval Inspection

There are other advantages attached to naval inspection than the one previously outlined. In the first place, it may be mentioned that there is no perceptible loss resulting from rejections made by a navy inspector, inasmuch as such material, except special material, can be usually disposed of to the trade. Careful government inspection at a manufacturing plant is the best kind of shop discipline, as may be inferred from the statement of a responsible official connected with a reliable establishment to the effect that he regarded inspection such as is practiced by the Navy Department inspectors and by the Pennsylvania Railroad, also, be it said, as the best kind of discipline in order to secure good material all along the line.

Again, it may be said that improvements in many industries, and particularly in the iron and steel industry, are traceable to government exactions. Many firms, by reason of successfully fulfilling rigid government requirements, acquire a reputation among the trade at large for first-class work which is a valuable asset. For many commercial undertakings, material is required of the very best quality obtainable, and such demands the concern familiar with navy inspection is able to satisfy with comparative ease. Finally, let it be urged upon reliable dealers that they have no more to fear from navy methods and navy inspection than from a private customer who intelligently insists upon a contract being faithfully accomplished.

A new white alloy has been patented by J. F. Duke, Manchester, England. The percentage of iron is 50.30; nickel, 19.16; copper, 29.14; aluminum, 1.40. It is said to be non-corrosive and, in spite of the high iron content, to resist the action of vegetable acids and the atmosphere. Its hardness can be increased by adding 1 to 2 per cent. of tin.

## Utilization of Hardwood Waste

At the meeting of the Northern Hemlock & Hardwood Manufacturers' Association in the Hotel Pfister at Milwaukee on April 23 and 24, R. B. Goodman, president Goodman Lumber Company and Goodman Charcoal & Chemical Company, Goodman, Marinette County, Wis., advocated the establishment of charcoal and chemical plants as a solution of the hardwood waste problem, and, as a second step, the establishment of a blast furnace unless there is one near enough to the operation to provide an outlet for the chemical wood plant output. The problems encountered after a by-product plant is established and the requirements of its operation are explained in the following extracts from Mr. Goodman's address:

"We have tried to solve the problem of utilizing a larger proportion of the waste in the woods and at the mill by erecting a chemical plant at Goodman for destructive distillation, the plant practically adjoining our mill, situated in the heart of the timber, thus inducing economy. Our chemical plant is of the oven type, the wood being loaded on iron buggies and shoved into large iron retorts or ovens."

Mr. Goodman then describes this plant as consisting of 6 large retorts, each holding 8 cords of wood per charge, having a daily capacity of 48 cords of hardwood. The returns, after a fair deduction for depreciation, show a profit of from 6 to 8 per cent. on a plant costing approximately \$200,000 and a working capital of \$25,000 in addition for preparing chemical wood, etc.—a margin of profit over a period of years of at least 50c per cord of stumpage. He continued:

"The requirements of wood for the retorts is very exacting. Only the heaviest slabs and edgings can be used and it is impossible to use wood containing excessive doze or streaks of rot. The wood must be split so that it does not exceed 6 in. in thickness or 12 in. in width; the wood must be all hardwood and seasoned for one year before it is ready for use. We have found serious difficulty in getting out this wood by the old method of wood choppers working in the timber, and therefore we early came to the conclusion that it would be cheaper to manufacture the chemical wood at the mill. We bring this chemical wood to our mill with our merchantable logs—sorting there and running the rough and small logs to the wood mill, where they are butted to 50 in. and run through split saws to be cut into sizes complying with retort wood specifications.

"Products of the plant are approximately as follows: Per cord of wood, 50 bushels of charcoal, 11 gal. of 88 per cent. crude alcohol and 160 lb. of acetate of lime. These products, with the exception of the charcoal, are easily marketable under normal market conditions. The difficulty with the charcoal is that the domestic market, within shipping radius of our Northern hardwood operations, is so narrow that it is impossible to depend upon it, and our chief wholesale use of charcoal is in the manufacture of charcoal pig iron. Owing to its low value and great bulk, and its tendency to spontaneous combustion, it is impracticable to ship charcoal in bulk for any great distance by rail, so that the second step in the process of utilizing chemical wood is the erection of a blast furnace unless there is one near enough to the operation to contract for its output.

"In the course of the past five years the total value of the charcoal, alcohol and acetate produced from a cord of wood has fluctuated from \$6, with practically no demand, up to a total of \$11. Our costs per cord carbonized are about \$8.50. As the weight of a cord of wood is approximately equal to 1000 ft. of lumber, and we are obtaining a cord of wood for each 1000 ft. of lumber manufactured, it will be seen that we are utilizing twice as much of the material in our hardwood forests as we were in the manufacture of lumber alone.

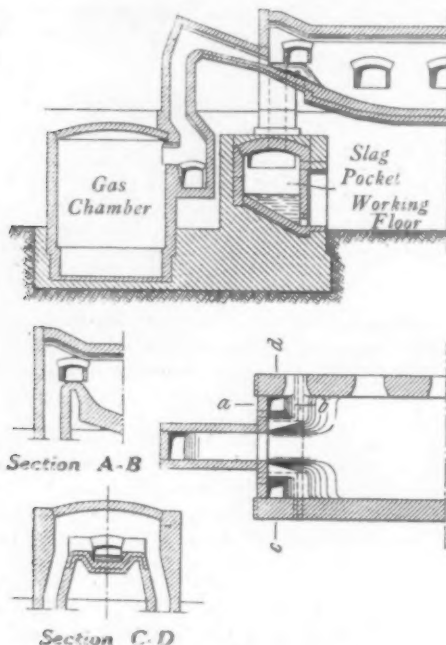
"Our own plant is the minimum in size that is practical to operate and plants twice or three times the size of our plant are better suited to economy of operation. It would follow, therefore, that the requirements for even the smallest chemical plant are as follows: First, a mill located near the timber—the available hardwood timber to be at years 20 yrs.' supply, at the rate of 10,000,000 ft. of hardwood per year; second, sufficient supply of running water; third, proximity of charcoal iron furnace. With these conditions met, the mill in the woods can make as great a profit out of its hardwood refuse as the mills in the larger towns can make by disposing of it as fuel."



## The Maerz Open Hearth Furnace

Changes in Design Which Have Resulted in a Number of Economies

In an article\* describing the Maerz open hearth furnace, R. Becker, steel works superintendent of the Ostrowiec Blast Furnaces and Works, after observing that for many years it has been the aim of the open hearth furnace designer to make the furnace more simple and durable, thereby reducing the operating costs and increasing the output, says that the Maerz construction is a long step forward in this direction. With the removal of the high and heavy air flues, with the attendant heavy reinforcement, the furnace is considerably simplified. As may be seen from the diagram the present plan of introducing the air into the hearth above the gas is done away with completely. Instead it is brought by the shortest way from the regen-



Elevation, Plan and Details of Maerz Open-Hearth Furnace

erators or slag pockets by means of vertical uptakes, and enters the furnace without being given any change of direction. The air ports are in front and at both sides of the gas port. The gas is introduced in the same way as before by means of longer and more sharply inclined ports. This immediate introduction of the air from below forms the simplest and lightest end construction conceivable.

A further requirement for the open hearth furnace is accessibility to all parts, especially those subjected to rapid destruction. Not only are the gas and air uptakes comfortably accessible from all sides, but also the port openings and the fire bridges between and in front of the air ports, by means of the small doors in the front and back walls. Further, with this construction the flame is held down better on the bath at the outgoing end, the passages for the waste gases being lower than with the old construction where, as is well known, the roof got very hot at the outgoing end.

The gas and air entering almost at right angles to each other brings about uniform furnace operation, the ignition point remaining constant and not steadily working back as with the old construction.

### Changes from the Original Furnace

The first furnace to be built according to this construction was one of 10 tons capacity at the Torgauer Stahlwerk at Torgau on the Elbe. The fuel used was water gas. The flame was held sharply down on the bath and the results were so good that the Maerz construction would appear to solve the question of heating with water gas. It can also be assumed that the results with cold coke oven gas would be equally good. The Ostrowiec people were so impressed with the promised good results of this construction applied to their conditions that at the

end of December, 1911, they began experimenting with a small 5 to 6-ton furnace used for making special steels. The Torgau furnace had then been in operation for nine months, and had been frequently inspected by Mr. Becker. Three arrangements of the air uptake and ports were tried with the small furnace, the last giving the best results. Each one is illustrated in the original paper, and in the last one the air uptake is almost vertical, the air entering the furnace by two ports at the side and in front of the gas port, similar to the diagram. The furnace was started early in January, 1912, and has made 1243 heats to date, working uninterruptedly except for small shut-downs when minor repairs were carried out. In regard to results it must be remembered that only high grade steels are made. The charge consists of 45 per cent. scrap, 45 per cent. pig iron and about 10 per cent. ore. The old construction gave 25.2 to 29.5 tons in 24 hours on the monthly average, using about 7.5 to 8.8 tons of coal per day, which equals on the average about 30 per cent. After changing and overcoming the so-called "infant diseases" the furnace worked considerably better and during the last three months has not made less than 31 tons in 24 hours; in not a few cases it has made as much as 37 tons. This is an increase in efficiency of about 24 per cent. The daily consumption remained the same, so that the average coal per ton for the last three months was only 24 per cent. This is a reduction of 20 per cent. It may be mentioned that the producer is of a very old design.

### Results with the Larger Furnace

As these results were so satisfactory the construction was then applied to a 30 to 33-ton furnace, which was to use the iron ore liquid pig iron process, in the manner shown in the diagram. The air ports are placed high and surrounded by bridges to prevent the slag entering even with the strongest reaction. This necessitates the ports being spaced far apart, but, nevertheless, a very active flame of great heating power is produced. The bridges are provided with cooling boxes, and as mentioned before every part can be easily observed and reached, so that necessary repairs can be promptly made. The furnace was started early in August. Comparative results cannot be given because cold charges were formerly used. The present method of working is to charge the necessary amount of ore, 17 to 24 per cent., and about 8 per cent. limestone by hand; two 15-ton ladles of iron direct from the blast furnace are then poured in. The reaction is very vigorous, the bath rising up to 51 in. above the middle of the hearth. The bottom of the gas port is 59 in. above the middle of the hearth. The slag is not allowed to run from the furnace. The flame covers the bath very well, even when it has sunk and begins to boil.

As is seen from the diagram, the air slag pocket is made very large, because most of the waste gases pass through it, this being the shortest way. This has proved to be very good, and the slag can be run from it in the fluid condition. There is not much more slag in the pockets and regenerators than with the old construction, one reason being that the brick work is not slagged so much. Only a small slag pocket is provided for the gas regenerator, and the slag collected in it was thick until the downtake was enlarged about a third, when it became thin and easy of removal.

The furnace makes  $3\frac{1}{2}$  to 4 heats in 24 hours, according to the composition of the pig iron. The fuel consumption is 19 to 22 per cent. So far 540 heats have been made and the furnace still works hot and well. The results have been so satisfactory that a second 30-ton furnace working the same process was changed over and started January 1, 1913. The operation of this furnace also has been fully satisfactory, the only change being a slight one in the gas uptake, which is illustrated in the original paper.

Among the advantages of the Maerz furnace is a considerable decrease in maintenance costs, chiefly brought about by the simple end construction and the corresponding saving in refractory material. With accessibility to all parts, repairs are rapid and easily carried out, some being possible during full operation. A decrease in the number of shut-downs increases the yearly output. The ignition point of the gas and air remains unchanged, so that the furnace operation is uniform throughout the whole run. The gas port deteriorates very slowly, as it is so well cooled by the outside air. Shorter time per heat results

\*Stahl und Eisen, March 20, 1913.

from the hot active flame which is held down closely on the bath because of the low ports and gives hot working. The outgoing end is cooler than with the old construction because of the early complete combustion; but there need be no fear of the flame being too short, as the gas and air can be regulated with ease and certainty. Long life of the roof and ports is secured. The hearth remains constant and does not build up as formerly when the ports burnt back. The hearth can be burnt in better, because one can work hotter; the hearth, therefore, is more durable.

The results have been so satisfactory that all the furnaces at Ostrowiec are to be changed to this construction, and the author is firmly convinced that still better results will be obtained.

G. B. W.

### An Electric Steel Warehouse

The Roebling Electro Steel Company, which is the United States representative of Roebling Bros., Ludwigs-hafen-am-Rhein, Germany, has established a warehouse at 173-177 Lafayette street, New York. The German company, which was founded in 1827, is one of the largest steel manufacturers in Europe and employs about 20,000 men. In its electric steel department it uses electric furnaces of its own design and has an output of high-grade steels amounting to about 25,000 tons per year. Its products have been sold in this country for two years, and because of increasing demand and the desirability of carrying large and complete stocks for immediate shipment the Roebling Electro Steel Company has been formed. The new company will handle high speed steel, electro silicon-manganese and chrome-vanadium spring wheels, hot rolled strips, wire rods, special automobile steel, case-hardening steel alloyed with nickel, chrome, chrome-nickel and vanadium and tool steel.

### Wrecking Crane with a Clam Shell Bucket

A wrecking crane equipped with a clam shell bucket has recently been built by the Browning Engineering Company, Cleveland, Ohio, and shipped to the Missouri & North Arkansas Railroad at St. Louis. The crane has a capacity of 75 tons when working at a 17-ft. radius with a curved boom, and it also has an auxiliary hoist that will lift 15 tons at the maximum length, which is 26 ft. An extra boom, which is 60 ft. long, is furnished with the crane to be used in connection with the operation of the clam shell bucket and will operate the bucket at the maximum radius. The bucket with its load weighs approximately 11,000 lb. The operating mechanism for the bucket is worked entirely with two auxiliary hoisting drums, one being positively driven and the other a friction-driven drum.

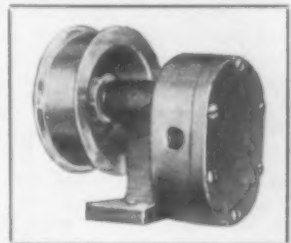
The approximate weight of the crane is 85 tons, and the journals are of the standard M. C. B. type, measuring 6½ x 11 in. The engines are 10 x 10 in. with a vertical linked

reverse motion; and the boiler was subjected to a 190-lb. cold water test. One man can hoist the load and rotate the crane at the same time from a platform where all the levers are concentrated, so that he has a clear and unobstructed view.

### Geared Oil Pump for Metal Working Machines

The Bickford Machine Company, Greenfield, Mass., has recently brought out a new geared oil pump, possessing as its special features a compact design and a special form of internal stuffing box. The pump is tapped for a ¾-in. pipe and will deliver oil or water with equal rapidity, the capacity being 3 gal. per min. when operating at a speed of 500 r.p.m.

As will be noticed from the accompanying engraving, the pump is of the regulation type and the main bearing extends all the way to the pulley, an arrangement which is due to the use of a special form of internal stuffing box. The pump will run in either direction and is designed for use wherever it is necessary to supply cutting compound to the various machine tools.



A New Geared Oil Pump Having a Special Form of Stuffing Box

Revolutionary activities in northern Mexico are seriously interfering with the operations of the Monterey Iron & Steel Company, according to advices received from Monterey. It is stated that the railroad lines leading to the sources of the iron ore, coke and coal supply for the plant are out of commission, due to the destructive tactics employed by the rebels. Monterey has been practically isolated from the United States, so far as rail communication is concerned, for several weeks. The operation of ore mining at Iron Mountain, situated adjacent to Durango, has also been made impossible recently by the troubled political conditions in that part of the republic.

A meeting on workmen's compensation and associated movements is to be held in Chicago at the Hotel La Salle, on Friday and Saturday, June 6 and 7, under the style of "First American Conference on Social Insurance." On the afternoon of June 6 is to be discussed the "Insurance Aspects of Workmen's Compensation"; on the evening of June 6 is to be taken up "Late Extensions of Social Insurance," and on the morning of June 7 is to be considered "Comprehensive Plans of Social Insurance." The meeting, it appears, is to be held under the auspices of the American Association for Labor Legislation.



A New Type of Wrecking Crane Equipped with a Clam Shell Bucket Attachment

# Operation of Blast Furnace Gas Engines\*

## Apparatus for Cleaning the Gas, for Starting the Engines and for Purifying the Lubricating Oils—The Value of Records

BY CHARLES C. SAMPSON†

One of the most important factors in the operation of blast furnace gas engines and one which held back the general use of these engines many years is the cleaning of the gas. As delivered by the furnaces to the downcomer the gas contains normally from 3 to 10 grains of dust per cubic foot of dry gas, but at times of slips or other sudden changes in the furnace, it carries much more. For use in engines the gas must be cleaned at most to 0.02 grain of dust to satisfy the requirements of the engine builders, but even this figure is too high to satisfy the operating engineer since it is possible to clean the gas to 0.005 or 0.006 grain per cu. ft. with great benefit to the engines.

The method of cleaning most used at present has three stages: (a) dry cleaning to  $1\frac{1}{2}$  to 2 grains per cu. ft. which is always done by the blast-furnace department; (b) primary washing in static washers to about 0.15 grain per cu. ft.; (c) dynamic or mechanical cleaning in highly developed machines to 0.015 grain or less. The last stages are usually handled by the gas-engine departments, though as the furnace men realize more and more that a cleanli-

centrifugal separation of dust from the gas as it passes inward through a cylindrical spiral opening into a dust basin at the bottom. The gas enters at the top of the outside, leaves at the top of the inner end of the spiral and passes upward through an extension of the pipe around which it is wrapped. The gas passes free of all obstructions at the upper end of the spiral while the dust separated drops to the bottom through the open end. There is no tendency for the gas to pick up the separated dust and carry it out as is the case in the older types of dry cleaners.

It is frequently found that sudden changes in the direction of flow of the gas, as at water seals or other necessary bends in the pipe, are quite efficient in the removal of the dust. In one case gas carrying about 5 grains per cu. ft. passed through four sharp bends and gave all dust but about 2 grains per cu. ft. For this reason every part of the dry gas main where such bends are necessary can be made to assist materially in the cleaning of the gas, if pockets are added equipped with valves so that the dust can be conveniently removed.

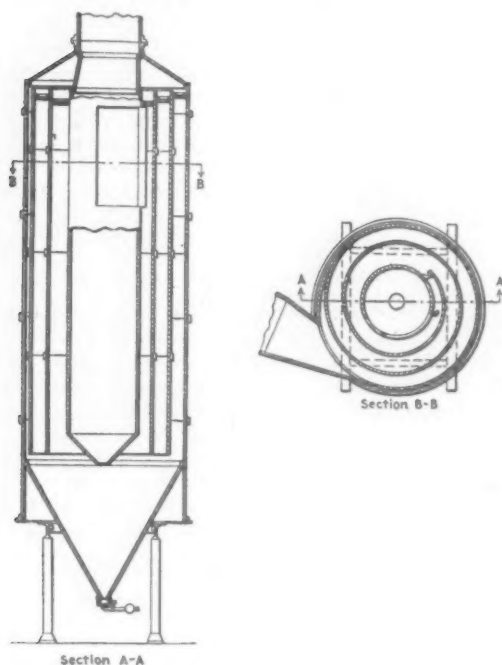


Fig. 1—Centrifugal Dust Catcher

ness of 0.2 grain per cu. ft. or less is of great benefit to the stoves and boilers they will take over the second stage, leaving only the final cleaning for the gas-engine department.

The dry cleaning is done in dry dust catchers, the standard design being a large diameter, vertical, cylindrical shell into which the gas enters tangentially near the top and leaves through a vertical outlet pipe which extends about two-thirds down from the top. These dust catchers remove the heavier particles of dust, but their efficiency is only about 80 per cent., as they pick up, or perhaps do not drop, the finer dust which is carried on by the upward current of gas to the outlet.

The refinement of design in dry cleaners has advanced materially in the past three or four years, as shown in the modern apparatus resulting from the careful study of the problem. One of the latest of these is the centrifugal dust catcher shown in Fig. 1. This device makes use of the

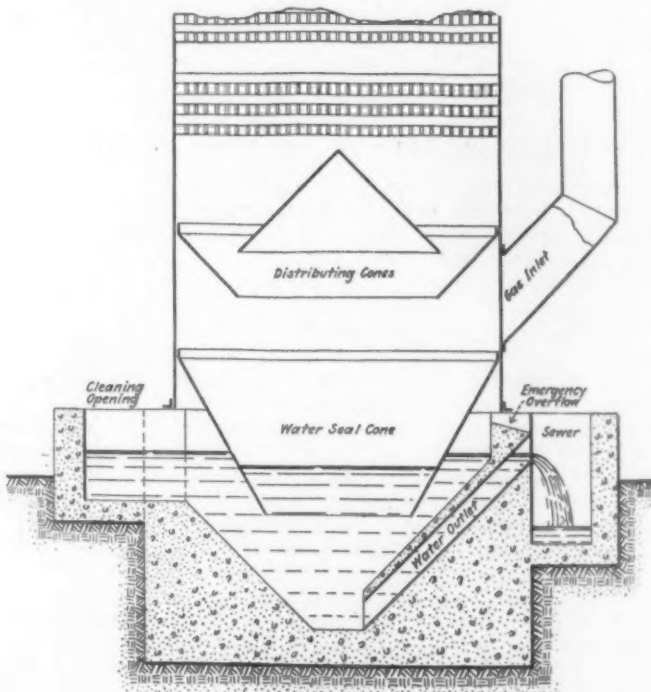


Fig. 2—Bottom for a Scrubber

Where long gas mains are necessary they can be made to add to the cleaning of the gas by building them in successive lengths with sufficient rise and fall to allow the dust to settle in pockets at the bottom angles for cleaning. If the gas for any reason moves slowly in a long main the loss of heat through the pipe will probably reduce the temperature below the dew point and thus condense some of the moisture carried with the gas from the furnace and cause the deposit of wet dust which adds greatly to the cleaning plant labor. This is especially apt to occur where two or more groups of furnaces supply one washing plant; the gas from the one with the lower top pressure will move slowly or even reverse its direction of flow at times, allowing excessive cooling and the resulting condensation. This condensation will begin when the temperature is reduced to 115 to 120 deg. F. and will of course give more trouble in winter when the condensed moisture will freeze in the dust valves and drips and require continual thawing to allow its removal.

It is possible to keep the gas mains clean without taking

\*Paper substantially in full to be presented before the American Society of Mechanical Engineers, Baltimore, May 21.

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them out of service if they are equipped with sufficient openings to allow every part of the pipe to be reached with a stream from a high-pressure water system, and with valves or doors at all low points for the removal of the mud washed down. The mains near the furnace of course do not need this equipment as they can easily be designed to make them entirely self-cleaning, while it is quite necessary that long mains where condensation may occur be so equipped.

The present primary washers (the first stage of wet cleaning) are of the static scrubber type and include all those in which the gas passes through a stationary shell without moving parts, the water for washing being supplied either in spray or sheets. The spray and hurdle, Mullen, baffle, and rain type scrubbers come under this classification. The spray and hurdle system is preferred on account of its better distribution of water; and since it is self-cleaning, it needs inspection only after long periods of operation. Several of these scrubbers have been opened after from one to three years' service and in every case have been found perfectly clean and required no repairs whatever before being returned to service. The wood was in good condition as it is continually wet and oxygen does not have access to it to start decay. In the rain or baffle types the gas is more apt to channel and travel up one side of the scrubber and the water down the other.

It is important to secure uniform distribution of the gas as well as of the water in any scrubber. For the inlet a cone about two-thirds the diameter of the shell with a cone-shaped ring below it open in the center about one-half the diameter of the shell will give good distribution. These should both slope about 45 deg. to keep the mud from remaining on them. Two outlets at opposite side of the top are better than one on account of the deflection of the water by the gas currents if only one is used. This is particularly true if the water is sprayed by falling on spray plates as the gas current may then be strong enough to blow the water clear of the plate and thus entirely lose its effect. Spray nozzles are not subject to this fault but are not able to handle water that has much dirt in it without a great amount of attention.

In designing the scrubber bottom, its foundation and the basin and overflow for the outlet water, it must be remembered that while the usual working pressure will be 6 to 18 in. of water, a slip will give pressure of 40 to 50 in. for a short time. A normal head of water of 36 in. from the bottom of the scrubber to the water overflow level with the basin walls 24 in. above this and an emergency overflow 4 in. below the top of the basin walls will care for slip pressure without blowing out any gas or overflowing the basin into the yard. The bottom of the basin wall will be self-cleaning if it has a steep slope and the outlet pipe is from the center of the bottom. The whole design of scrubber and basin must be examined to eliminate all places where mud can remain long enough to cake. Fig. 2 shows this arrangement of scrubber bottom.

Should the water overflow pipe be stopped even for a short time the heavy mud will settle to the bottom of the basin and when the overflow pipe is cleaned there will be such a quantity that even the extra head of water to the emergency overflow will not force it out. For this reason the forming of heavy chunks must be prevented as much as possible and provision must be made for stirring the basin water both with hoes or rakes and with a stream of water from the end of a pipe which can be thrust into all parts of it. It will be found convenient also to have the pipe bent at the end so that the stream can be directed up the overflow pipe to furnish additional head for starting the flow when necessary, or a special pipe with return bend and short nipple to thrust down the overflow pipe itself will surely be able to start the flow.

The final stage in cleaning is done with mechanical scrubbers or washers. These are highly developed and the Theisen patented gas washer has been in the lead for several years though other types are now being worked out, their builders claiming better results with less water and power consumption than the Theisen. The Theisen washers require about 3 per cent. of the power-plant output for their operation and 16 to 18 gal. of water per 1000 cu. ft. of gas cleaned, which added to the 75 to 80 gal. required in the scrubbers makes the total 90 to 100 gal. for the whole cleaning process. The newer apparatus, which are along the lines of the mechanical disintegrator, claim to use about 20 gal. of water per 1000 cu. ft. of gas for

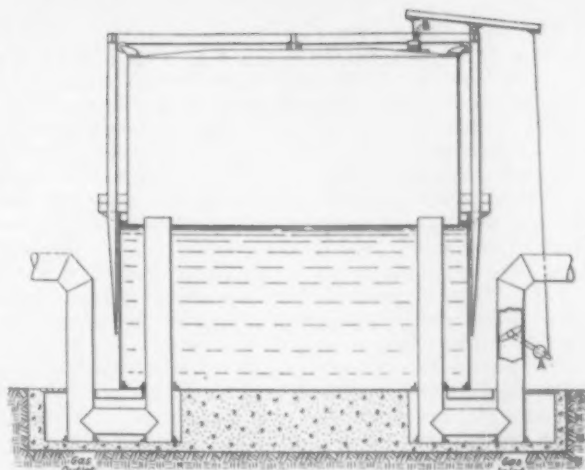


Fig. 3—Arrangement of Regulating Valve for Gas Holder

the whole cleaning process and to operate on less power than the Theisen washers.

#### Gas Holders

In blast-furnace gas-engine plants the engines are entirely dependent upon the continuous supply of gas from the furnaces; a 100,000-cu. ft. capacity holder can only be considered a pressure regulator with capacity for enough gas to allow retiring in good order when the gas supply is cut off for any reason. Thus in a 1000-kw. plant with such a holder the gas on hand would operate the plant only for about 25 to 30 min. and should not be counted on for more than 15 to 20 min. This in an emergency would give time to notify the various departments using power and allow them time to prepare for a shutdown.

The quantity of gas consumed by the engines is regulated by the governor to suit the power output, but since they must be supplied with gas at a uniform pressure for satisfactory operation, it is necessary to regulate the gas supplied by some type of gasometer. This is best done by a gasometer of capacity such that the pressure fluctuations are not noticeable at the engines, and since it is well to have an emergency quantity of gas the gas holder itself will meet both demands at once if supplied with an efficient regulation valve. The holder will regulate the pressure perfectly between the maximum limit of the total quantity of gas that can be forced through the mains with the furnace pressure available assisted by the gas washers and the minimum limit of the leakage at the regulating valve.

There should also be the possibility of regulating the gas quantity at the secondary washers since at times of very light loads the gas pressure between the holder and washer may blow out drip seals or cause dangerous gas leaks. This can be cared for by the installation of butterfly valves with quadrants either before or after the mechanical washers. The latter is to be preferred, for then the gas remains longer in the washers and receives additional cleaning.

A good regulating valve at the holder is a butterfly valve attached by means of levers and cables to the holder bell so that it will remain wide open until the bell rises within a few feet of its upper position, and close gradually till at the highest position it is completely closed. The arrangement shown in Fig. 3 works satisfactorily. The weight *A* must be heavy enough to close the valve and the weight *B* must be heavy enough to open the valve and also lift the weight *A*.

All exposed water lines must be protected from freezing. This is especially true of the supply to seals, drips from the gas main, and any line that does not have a continuous flow. With good water separators after the secondary cleaning apparatus, freezing weather or even 8 or 10 deg. F. below zero, will not cause trouble in the gas mains themselves, though any valves which may be nearly closed or which are closed part of the time must be carefully protected. The butterfly valve for regulating the gas should be enclosed in a tight box with steam coils to keep it in working order. This also is true of the valves at the gas-washing plant unless it is possible to install them within a heated building.

The water in the gas holder must also be warmed. The exhaust from the regulating valve coil will easily keep the

holder water warm enough to prevent freezing except in the coldest weather (under 0 deg. F.), when it is usually necessary to supply additional steam through several nozzles arranged to set up a circulation of the water around the tank. These should be well down in the water or ice will form on the lower part of the shell and build in toward the center and prevent the lowering of the bell. During the time the holder water is warmed it is important frequently to observe its temperature; if too hot it will charge the gas with water so that condensation and freezing will take place in the gas-engine supply pipes. When the water circulates properly in the holder it is not necessary to have it any warmer than 38 or 40 deg. F., while a rise to 65 or 70 deg. will give trouble.

If the gas holder is not visible from the gas-washing plant the operator needs a visible signal to give him its position, also an audible signal to inform him if it should lower beyond safe working position, the amount of the drop allowable before the audible signal operates being determined by the position of the regulating valve at the holder. The drop should be less than an amount to give a complete opening of the valve. The gas-washer operator should have telephone connections with the engine room, besides the usual whistle or bell signals which are used to notify him of the starting or stopping of engines. He should also be in close touch with the blast-furnace department in order that any change in the gas supply can be known in advance.

In all gas-pipe lines so-called explosion doors are installed. These are as a rule useful only for access to the main for cleaning, usually being made of cast iron and hinged; on account of their weight and method of attachment the moment of inertia is so great that they will not open quickly enough to prevent the destruction of the main in which they are installed. Any gas main that will support itself over the span usually employed will easily stand any pressure that can be produced in the cleaning plant, and the use of these valves or other relief valves is not necessary. The inconvenience of escaping gas makes it advisable to design them as cleaning doors only, and to arrange them with a clamp fastening to avoid this inconvenience. If it is thought necessary to instal explosion doors or valves I would suggest the use of sheets of light material arranged in frames so that they will be blown out should an explosion occur in the main.

The best protection from explosions is careful operation, especially to guard against a reduction of pressure of gas at the furnace side of the cleaning plant due to no air being drawn into the main at the stoves, and to see that no piece of apparatus is put in service with air trapped so it can be mixed with the gas and sent along to the engines.

#### Recording Instruments and Records

Thermometers and pressure gauges for indicating the temperature and pressure of the gas entering the cleaning plant, between the primary and secondary washers, leaving the latter, and before and after the gas holder, form important parts of the gas-cleaning system. The ordinary gas works thermometer with a stem reaching about 8 to 10 in. into the gas mains are to be located at each of the points, while pressure gauges of the U-tube type with inches of water as a measure of the pressure can be located in the gas-washer building and connected to these points by  $\frac{3}{8}$ -in. or  $\frac{1}{2}$ -in. gas pipe. Recording gauges should be used in connection with the indicating water column for the gas pressure at the entrance to the cleaning plant and in the gas main leading to the gas holder.

The successful operation of the gas-washing plant is very much advanced by the proper understanding of the meaning of the variation shown by these thermometers and gauges. For this reason it is important to keep a record of these variations on carefully designed daily log sheets with at least eight daily notations. The gas-washer operator soon learns to interpret the gauge and thermometer changes, and will often foretell serious trouble by such understanding. For instance, the partial filling of a water seal is indicated some time before it will cause trouble by the swinging of the water in the U-tube, this movement being so markedly different from any other that he knows at once the trouble and from the location of the gauge can easily tell which seal is filling. The daily log sheets should have space reserved for the operator to note any unusual occurrence and the work done to keep the plant in condition. It should be in fact a complete report of each day's

work to the engineer in charge, keeping him in close touch with the changing conditions in the gas-cleaning system.

#### Engine Starting

A second most important factor in successful gas-engine operation is good engine operators, and the same characteristics which are valuable in steam-engine operators are valuable in the gas-engine engineer. The operation of the engines themselves is exactly similar as far as the running gear is concerned and it is only the fact that the gas engineer is fireman as well as engineer that makes it necessary that he be more alert and watchful. Economical operation of gas engines on the same account requires that the engine operator must have his sense of "the feel of the machine" well developed.

Compressed air at 150 to 200 lb. per sq. in. pressure has proved satisfactory for starting gas engines and is especially desirable on account of the ease with which a suitable quantity can be stored under pressure ready for use at any time. In a starting system of 2000 cu. ft. capacity the air pressure is lowered about 20 lb. in starting one 3000-kw. twin-tandem unit, and since 150 lb. pressure is sufficient for a start, there is a possibility of at least three starts from 200 lb. initial pressure, which is certainly sufficient to get under way even during the excitement of an emergency shutdown.

Record was kept of the pressure drop in starting an 1800-hp. twin-tandem Allis-Chalmers engine from an air system having two tanks of 1100 cu. ft. capacity each. This record included 19 starts, 16 using the full capacity of the system and three with one tank out of service. It was noted that the quantity of air required to start the engine was about the same, regardless of the pressure in the air tanks.

The necessary capacity of air tanks and air compressors for a given plant depends upon the number and size of engine units, and the frequency with which they may need to be started. After the engine operator becomes familiar with the operating peculiarities of the engines he should be able to start them at intervals of from 4 to 8 min. and not lower the air pressure more than the compressor can make up in that time; if an engine lowers the pressure 8 lb. per sq. in. in a 2000-cu. ft. capacity system, the compressors should compress  $\frac{8}{15}$  of 2000 = 1060 cu. ft. free air in the maximum time allowable between starts or say 10 min. This would require two 106-cu. ft. compressors. For the ordinary blast-furnace gas-engine plant of three to six engines, two air compressors of 100 cu. ft. capacity and air tank capacity of 2000 cu. ft. are quite sufficient, while for more than six engines the compressor capacity should be increased rather than the tank volume. At least one of the compressors must derive its power from some source outside of the gas engine in order to be able to start the plant if all units should be down.

It is important to keep the water jackets thoroughly clean and the item of jacket cleaning should appear regularly in the engine operation schedule. This cleaning requires careful attention since, with the class of labor usually put on this work, it will be slighted in the places where the most care is needed.

#### Lubrication—Cleaning Oil

The question of lubrication is one of so many variations I can only say that for general lubrication of such as main bearings, crosshead and crankpins and crosshead slides, where the rubbing surfaces are at room temperature, an oil of the following physical characteristics has given excellent service:

Specific gravity.....	888
Viscosity (Tagliabue).....	210 at 70 deg. F.
Cold test.....	35 deg. F.
Flash temperature.....	435 deg. F.

This service also includes satisfactory separation of water and dirt by settling and filtration. On account of the almost certain mixing of water from the cooling system with the system oil, it is necessary to provide means of separating the water and oil in the filtration process and it can be done thoroughly only by heating the oil to about 160 or 190 deg. F. and giving it time in a quiet condition to allow the separation. A large part of the dirt will settle with the water. Such that does not, must be removed by filtration through fine cloth either of organic fibre or

of fine wire. The latter is more to be desired because of the ease with which it can be cleaned.

A good oil-cleaning system giving excellent satisfaction consists of one 1500-gal. water-separating tank, shown in Fig. 4, with a heating coil over which the oil flows as it enters on returning from the engines, and an adjustable automatic water overflow to discharge the separated water, two settling tanks of the same size through which the oil passes in tandem to allow time for quiet settling of dirt particles, and a filter unit with 20 filter bags, 10 each in two filter tanks. An extra tank is used when any of the other three is out of service for cleaning. An auxiliary tank of about 200 gal. capacity is used for "boiling up" the sludge taken from either of the large tanks or the filters at time of cleaning as well as such dirty oil as can be drawn off daily from the bottom of the overhead oil tank.

This system is shown in Fig. 5. The oil from the engine drips enters tank A over the steam coil, flows down through the inner cone, then up and out the overflow to C and D, thence to the filters F and G through E, which

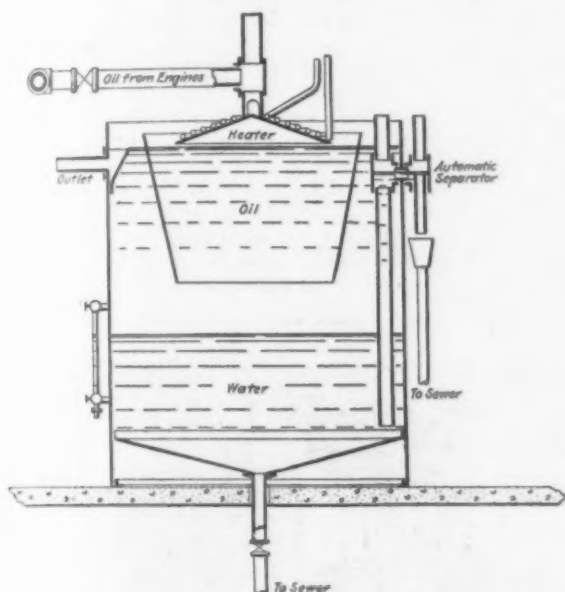


Fig. 4—Water Separating Tank for Oil-Cleaning System

is also a water separator. The clean oil is pumped from the filters by one of the pumps at K, which are in duplicate, to the overhead engine supply tank in which the quantity of oil on hand is shown by an index on a large gauge visible from the engine-room floor. Gauge glasses on each tank show the level of the line between the oil and water both as an operating convenience and as a means of checking the quantity of oil used during the month. The separated water flows down the inside of the cone in A to the bottom of the tank from which it flows through the automatic overflow H. The nipple in the tee at H is adjustable so that the water in A can be held at the level found best in operation.

A part of the dirt is oil-coated so that it floats between the water and the oil and will accumulate until its removal is necessary. The oil from the engines is then turned into tank B, the supply to C and D being kept up by stopping the water overflow and filling A with water as long as good oil flows out. The water is then drawn off to the sewer and the sludge pumped into the boiling tank J where as much oil is reclaimed as possible. The other tanks are cleaned in the same way. There are pipe connections from the bottom of all tanks to one of the pumps, also from the discharge of this pump to the tank J.

Such an oil system will keep the oil clean for a plant circulating 500 to 600 gal. per hour. Of course some oil is lost through leakage at the engines, and some is wiped up in keeping the engines clean, but the addition of new oil need not amount to more than 100 gal. per month. In blowing-engine plants where the engine oil is drawn into the blowing cylinders from mechanically operated valves the oil consumption will not be so low unless good oil separators are installed in the cold blast mains arranged to discharge this oil back into the oil system.

The cylinder oil question is also one of many opinions. The varying cleanliness of the gas, hardness of cylinder walls and piston rings, piston speeds, mean effective and maximum pressures, all have their influence on the action of the cylinder oil. An oil showing a specific gravity of 0.902; viscosity (Tagliabue) of 78 at 212 deg. F., and a flash temperature of 380 deg., gave excellent results in a gas-blowing engine plant where the dust was low (0.01 or less) and piston speeds less than 600 ft. per min., and was not satisfactory in another, with 0.012 dust and piston speeds of 850 ft. per min. In the latter case the oil was replaced by one of specific gravity, 0.920; viscosity, 203 at 212 deg. F., and flash temperature, 502, and immediate improvement was shown. With the lighter oil the cylinders were not dry in any part though they did show more wear than was expected for the time in service, the machining marks in the bore being almost invisible after three months' operation.

#### Premature Ignition

Premature ignition in the gas engines is usually caused by excess hydrogen in the gas, and will occur when the quantity of hydrogen reaches 4.6 per cent., depending also

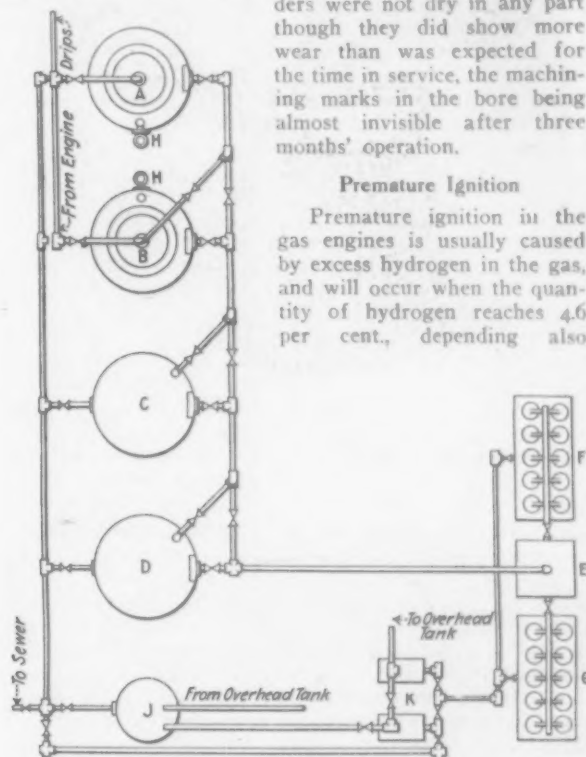


Fig. 5—Oil-Cleaning System: A and B, Water Separating Tanks; F and G, Filters; J, Boiling Tank

upon the cleanliness of the cylinders. This prematuring is one of the first indications of leaking cooling plates in the furnace and the gas-engine operator will often be able to inform the furnaces of this condition before they learn of it themselves. When a furnace has the wind off for casting, the water pressure in the cooling plates is greater than the furnace pressure and water enters the furnace and is immediately dissociated; the oxygen being consumed by the coke leaves the excess hydrogen in the gas. When the wind is put on again this gas, rich in hydrogen is sent along to the engine, causing prematuring.

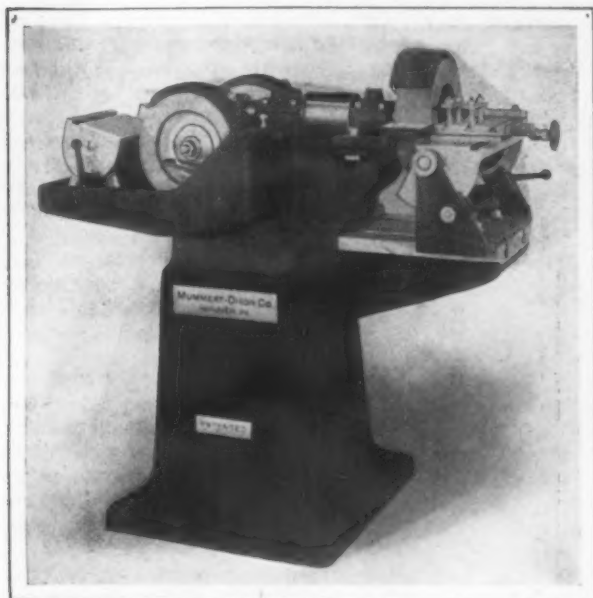
The strike of the molders and coremakers of the Dunkirk, N. Y., plant of the United States Radiator Corporation, called about eight weeks ago, was settled May 2. The strikers, at a mass meeting, unanimously ratified the tentative agreement reached at a series of conferences between their committee and the officials of the company. The men are given a general wage increase and will be represented at the plant by a shop committee, which will be recognized by the company on all grievances. The piece-work schedule, revised in accordance with the agreement signed, will be pasted conspicuously in the shop, so that all employees will have access to it. The settlement was brought about by mediators from the State labor department.

Official statistics recently issued show that the production of iron ore in Spain in 1911 was 8,773,691 metric tons; of iron pyrites, 344,879 tons, and of manganese ore, 5607 tons. The total exports of native iron ore amounted to 7,137,000 tons, as compared with 8,151,000 tons in 1910.



### Machine Shop Oilstone Grinding Machines

For general machine shop use, and especially for work in the toolroom, the Mummert-Dixon Company, Hanover, Pa., has brought out an oilstone grinding machine. Two



A Machine Shop and Toolroom Grinding Machine Equipped with Two Oilstones

wheels, one coarse and the other fine, are mounted on the front arbor, and a tool rest, which can be easily adjusted to any desired angle and held by a convenient locking device, is provided in front of each wheel. The coarse wheel enables rough grinding operations to be performed, while the fine wheel can be used for finishing and also for sharpening lathe and planing machine tools. It is emphasized that the kerosene employed keeps these stones sharp and prevents glazing and undue heating of the tools while the grinding is being done.

The wheels are cup shaped and the oil which is delivered to them by a small rotary pump is directed to the inside of the wheel and works out through the pores of the wheel. When the wheels are once saturated, it is stated that very little oil is required. Guards prevent the oil from being thrown by the wheels and any surplus is caught in the pan and returned to the reservoir in the base from which it is again taken by the rotary pump.

A ring emery wheel is mounted at the rear of the machine, and at the back of this there is a slide table which is adjustable to any ordinary angle. The work is held on the table by a slide which is provided with micrometer adjustment. A rest is provided, so that the periphery of the wheel can also be used, and it is pointed out that many hand filing operations and fittings can be performed here more quickly and accurately. The speed of the ring wheel is four times as great as that of the oil stone wheels.

This machine can be furnished for either belt or electric motor drive, and when the latter is employed, the motor is placed in the base and the belt led up to the driving pulley.

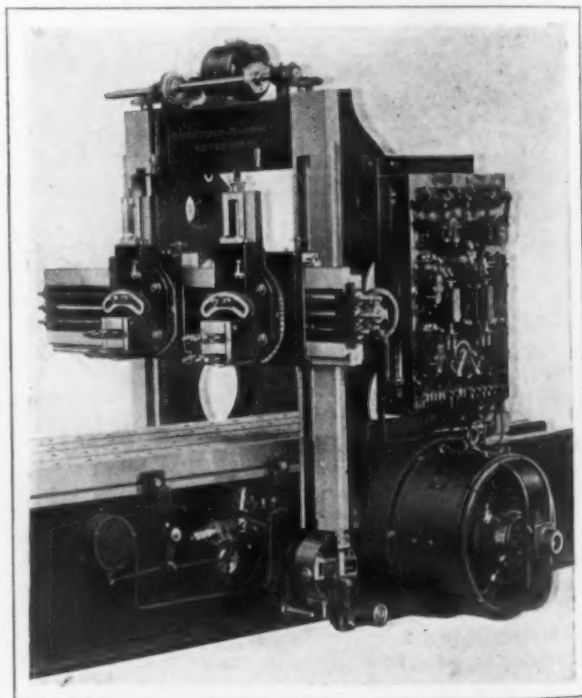
### Iron Ore Under Lakes Not the State's

Unless the higher courts reverse the decision of District Judge Cant of Duluth, the State of Minnesota will be unable to lay claim to the vast amounts of iron ore known to underlie the beds of lakes in the Mesaba and other districts. The decision that the State has no right to the land under the water employed for mining purposes, so long as such operations do not interfere with the public use of the lake or body of water, was given in a suit brought by the State against the White Iron Lake Mining Company and the Euclid Iron Mining Company, as lessees, and Eliza and Annie L. Korrer, the fee owners of a tract bordering Long-year Lake, Mesaba range. If it can get a final decision in its favor the State will lay claim to millions of tons of ore under Embarrass Lake.

### A Heavy Pattern Reversing Planing Machine

The Rockford Machine Tool Company, Rockford, Ill., has recently brought out a 36 x 36 in. x 10 ft. planing machine equipped with reversing motor drive. The motor is installed in a special frame, which is bolted directly to a pad on the planing machine proper. In this way, the machine is self-contained and no care is needed to keep the machine and the motor in perfect alignment. Other advantages of this arrangement are the elimination of the coupling and the saving of a considerable amount of floor space. If it is desired to dismantle the motor for repairs or examination, the armature is easily removed by driving out the gib head, key and taper pin from the main driving pinion and the set collar and removing the head from the motor frame. For elevating the cross rail, a separate motor, which is operated from the left side of the machine is used.

In designing the machine, heavy construction has been used. The beds are  $1\frac{2}{3}$  times the length of the table and the cross girders are of box section. The housings are also of box section, extend the full depth of the bed and are finished to receive side heads, which can be furnished at any time subsequent to purchase. The saddles are of solid construction, thus doing away with clamping devices and are fitted with taper gibs for the top and back of the rail slide. They are made in right and left patterns, thus allowing two to be used close together without reducing the width of the saddle bearing on the cross-rail. Graduations are provided, so that the heads can be adjusted from either side of the machine. Horizontal, vertical and angular power feeds are furnished for the side heads. The table is designed to prevent grit from



The Driving End of a New Heavy Pattern Planing Machine Equipped with a Reversing Motor Drive

entering the V's and the driving gears are all inside the bed and out of the way of falling chips. The feed friction is of the double releasing type and it is pointed out that it will run at high speed without heating. A safety lock on the operating lever is provided to prevent the machine from starting except at the will of the operator.

The Steel Company of Canada inaugurated an important movement at the annual meeting of shareholders, when approval was given to a co-operative plan submitted by the directors, by which preferred stock of the company will be sold on favorable terms to employees. The financial statement presented by Treasurer H. H. Champ was considered satisfactory. The following were elected officers: President, C. S. Wilcox; vice-president and general manager, Robert Hobson; assistant manager, F. H. Whitton, secretary and treasurer, H. H. Champ; assistant secretary, C. F. Whitton; assistant treasurer, H. S. Alexander.

### International Engineering Congress at San Francisco in 1915

An International Engineering Congress will be held in San Francisco in 1915 in connection with other Panama-Pacific International Exposition activities. The congress will be conducted under the auspices of the American Society of Civil Engineers, American Institute of Mining Engineers, American Society of Mechanical Engineers, American Institute of Electrical Engineers and Society of Naval Architects and Marine Engineers. These societies co-operatively have appointed a permanent committee of management, consisting of the presidents and secretaries of each, and 18 members residing in San Francisco. The committee has effected a permanent organization, with Prof. William F. Durand as chairman and W. A. Cattell as secretary-treasurer, and has established executive offices in the Foxcroft Building, 68 Post street, San Francisco.

The ten members of the committee consisting of the presidents and secretaries of the five national societies, will constitute a committee on participation, through whom all invitations to participate in the congress will be issued to governments, engineering societies and individuals. The personnel of this committee is as follows: Charles F. Rand, chairman; Charles Warren Hunt, secretary; D. H. Cox, W. F. M. Goss, F. L. Hutchinson, Ralph Davenport Mershon, Calvin W. Rice, Bradley Stoughton, George F. Swain and Robert M. Thompson.

The honorary officers of the congress will consist of a president and a number of vice-presidents selected from the most distinguished engineers of this and foreign countries. It is intended that the congress shall be the most comprehensive ever held; that the progress made in every branch of the engineering profession in the past decade shall be thoroughly reviewed and the latest developments and most approved practices be accurately stated by the leading engineers of the world. All papers read are to be collected and published and are expected to form a valuable engineering library.

### Rapid Equipment of a Factory

A case of the rapid equipment of a factory is had in the occupation of the Pedrick Tool & Machine Company of its new quarters at 3640 North Lawrence street, Philadelphia, Pa., maker of cylinder boring bars, crank pin turning machines, pipe benders, milling machines and various attachments for doing machining work under peculiar difficulties. The company has now possession of a two-story building measuring approximately 33 x 104 ft. When it entered the building on February 18, the first floor had not yet been put down. The building was besides filled with a large amount of old building materials which had to be removed before operations could continue.

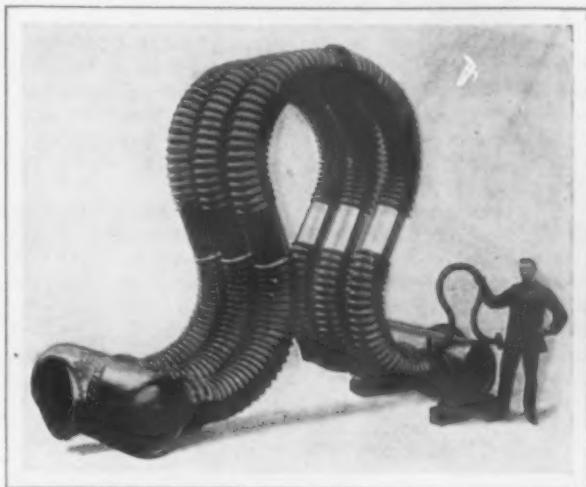
For the source of power, the company is using a De La Vergne oil engine, and for this a deep concrete foundation had to be constructed, but this was sufficiently dry when the engine was received. During the construction of the foundation string pieces were prepared for attaching the shafting hangers to the ceiling, and meanwhile the steam heating plant was being put in and also the elevator. An office was provided on the second floor, large enough, it was calculated, to take care of future requirements. One of the first things to receive attention was the building of a tool and store room with racks and bins for keeping drills, reamers, taps, etc.

On four weeks to the day that the company entered the premises, the engine was stated, and by the end of the fifth week work had been begun on building machines, some 20 tools of different sizes and weights, including lathes, drilling machines and milling machines, having been installed.

**Iron and Steel Institute Directors.**—At the annual meeting of the members of the American Iron and Steel Institute held at its headquarters in New York on Monday, May 5, 1913, the following directors were unanimously re-elected: Edward Bailey, Harrisburg, Pa.; Joseph G. Butler, Jr., Youngstown, Ohio; Edmund A. S. Clarke, New York; Willis L. King, Pittsburgh; Samuel Mather, Cleveland; William H. Donner, Pittsburgh; John A. Topping, New York.

### An Improved Form of Corrugated Tubes

A new process for the manufacture of corrugated tubes has been patented by W. Maciejewski, a Polish engineer. By this method, it is possible to corrugate either standard wrought-iron or steel tubes, the corrugations being made by pressing the material together in a special machine. Ord-



Specimens of Corrugated Tubing Made by the Maciejewski Process in Which the Internal Diameter Is Not Reduced

nary steel tubing or lap-welded and rerolled tubes are used, according to the pressure and size required, ordinary steel tubing being used for small and medium sizes, while the other material is employed for large diameters. One of the special features of the process is that although the tubes are shortened by the process the corrugations are pressed into them at equal distances apart without decreasing the original internal diameter and at the same time the wall thickness is uniform and the same as it originally was.

Among the uses to which these tubes can be put are in steam pipe lines, in fire tube boilers, in superheaters, in radiation surfaces for steam heating systems and also in marine work. These tubes can be made in all sizes from diameters of 1½ in. up to 18 in., the average length being about 12 ft. In very long lines the tubes can be partly corrugated.

The tubes possess considerable elasticity, which is of advantage in steam pipe lines, especially where contraction and expansion changes have to be accommodated or vibrations of the engines, pumps and other units are taken care of, and also in marine work where the space for expansion and contraction is limited. The use of these tubes in boilers, superheaters and radiators increases the amount of surface with the result that less material should be required. These tubes can also be used as a substitute for U bends and expansion joints in pipe lines.

In a test recently made of an ordinary 6-in. pipe bent into a U shape, with one end fixed and the other free, the application of a lateral pressure of approximately 1300 lb. produced an axial movement of about 1½ in., while the application of the same pressure to a corrugated pipe of the same size and thickness and bent in the same form caused an axial movement of over 6½ in. From the results of this test it will be seen that when high pressure steam is used and the lines are long, flexibility is an advantage in relieving the flanges from stresses. These tubes will bend readily and curves of very small radii should thus be feasible.

Schuchardt & Schütte, West Street Building, New York City, are the American representatives.

The production of iron ore in the Krivoi Rog district of South Russia reached the unprecedented total of 5,528,000 metric tons in 1912 as compared with 4,853,000 tons in 1911, an increase of 14 per cent. The home consumption amounted to 4,934,000 tons in 1912 as against 3,969,000 tons in 1911, a 24 per cent. increase. The falling off in exports was nearly 300,000 tons in 1912, or 32 per cent.

Okura & Co., exporters, have removed from 11 Broadway to 30 Church street, room 610, New York.

## Hunger, Rest and Shop Efficiency

Rest Periods in European Works  
Appear to Promote Contentment

—BY MAX H. C. BROMBACHER—

The article in *The Iron Age* of May 1 headed "Hunger and Shop Efficiency" greatly interested me. It brought to my mind vividly that, during my trip abroad visiting railroad shops last year, in the course of which I traveled in many countries, I had seen different forms or phases of efficiency being tried out continually and perhaps unconsciously. I mean that managers were not consciously experimenting in respect of efficiency. But they were obtaining, for one having his mind on that subject, very interesting results indeed.

For instance, taking the subject of the article mentioned above, the French railroad shop mechanics agreed in practice with the conclusion arrived at by its author. They seemed to understand the underlying idea intuitively. The French mechanic puts in 12 hours per day at the shop; he works but 10 hours; the other two hours he puts in at eating and resting. At first glance this may appear "dead slow" to our mechanics, who are willing to cut their lunch hour in half, or even more, to leave the shop half an hour earlier. Not so with the French mechanic, who seems to understand that proper care in eating and digesting his food, and in not working too many hours uninterruptedly between eating, is productive of best results from his viewpoint. This may be called long range efficiency; that is to say, the care he takes of himself and of his stomach in these respects enables him to hold his own longer than can his colleague in the railroad shops of this country.

### The Poorly Nourished French Mechanic a Fiction

There was practically not a single part of France which I did not visit. The shop mechanics as a rule looked well fed. Considering their smaller stature as compared with their German colleagues, they seemed to be a pretty sturdy lot. I must confess that I saw nothing of the poorly-nourished French mechanic which I have read about in interviews given out by Americans. These interviews seem to be based upon reasoning about like this: American mechanics eat a lot of meat; American mechanics are very efficient. French mechanics eat very little meat; hence French mechanics are not well nourished and cannot be efficient. It seems to me, however, if one considers the relatively archaic character of the tools in the average French railroad shop compared with our tools, and if one considers the much more accurate workmanship of the French mechanic compared with ours, I do not think that there is so great a difference as to the efficiency of the respective mechanics as is generally supposed to be the case.

Considering the subject of rest, I had it brought home to me that the mechanics in the rural shops had a fuller comprehension of the benefits of rest than those in the urban shops. It seemed to be the consensus of opinion that the rural mechanic absolutely refused to work as hard as the urban mechanic was willing to work; that he was satisfied with smaller earnings on the same job, at the same piece work schedule, than his urban colleague. As the tools in some instances were identical, this effected a penalization of the tool in the rural shop, as it cut down the output. The rural mechanic took the position that he was satisfied with the smaller earnings; that he preferred the longer life.

All hands agreed, however, that the rural mechanic was much easier to get along with than his urban colleague. There seemed to be some sort of relation between good digestion, through slow eating and frequent periods of rest, and an equable disposition, with an apparent spirit of content. It was hard for me to understand this at first. I had naturally read and heard a great deal about "bovine content" and about "divine discontent." But when I was shown specific instances of rural mechanics refusing to work hard enough to turn out as many of the same job as did their urban colleagues on the same tool, I began to see a light—to understand that after all it was possible that the European mechanic had a better conception of what constitutes happiness than the majority of his American colleagues. He seemed to have grasped the fact that, after all, money madness was by no means an infallible sign of divine inspiration; that to get all there was out of

what one had was a much surer sign of divine inspiration than mere money madness, so often and so politely called "divine discontent."

### What Hunger May Cause Men to Do

Speaking generally in reference to other Continental countries which I visited, I found about the same state of middling content on the part of the workmen, although in Germany, owing to reasons which will appear later on, I found a higher efficiency. But in the case of Austria, there was an exception—a rift in the contentment—at least in regard to the urban railroad shops. I discovered there that the railroad companies had been obliged to eliminate from their coaches every vestige of brass or other valuable metal and substitute cast iron, gilded. On asking a shop official the reason for this, he explained it as being due to the exclusion for special reasons of Bulgarian beef and cattle. This put the price of meat out of reach of the mechanic. To get a little more money, a practice grew among the workmen to strip the cars of every bit of valuable metal on their arrival at the shops. The substitution of gilded cast iron had to be made as a preventive. The superintendent really felt sorry for the poor mechanics; as he put it, "wenn der magen knurrt, hört die verantwortlichkeit auf," meaning "when the stomach gnaws, responsibility ceases."

### A German Method of Handling Elderly Workmen

The clearest demonstration of the value of rest on individual output was had in Germany. In perhaps the newest of German railroad shops, arrangements had been made and rooms set apart for permitting the mechanics who had attained a certain age to rest. The rooms were furnished with regular couches and each man in this class was allowed a rest of an hour a day at the expense of the shop, but the hour was divided into three periods of 20 min. each. It had been started with permission for the men to take their rest in one straight hour, but the results were not entirely satisfactory. On dividing the rest into three periods of 20 min. each, there was decided improvement, even better results having been obtained than had been hoped for.

The underlying idea in this matter was, German-like, pure sentiment, and, as is often the case, it worked out better than had been anticipated. The purpose had been to maintain the output of the older men at a point as near to that of their younger colleagues as would save the former from the thoughtless derision of the latter. It was not hoped for to increase the output (efficiency) of these elder men, but merely to keep them from retrograding too far and too fast. The result was gratifying in the extreme. Needless to say, one reason for the result obtained is that the elder men have thus been enabled to retain their own self-respect, their real self-respect, and not a feeling of bumptiousness which so often is mistaken for self-respect.

Germany is of course far in the lead in respect of the individual efficiency as well as the shop efficiency of its mechanics as compared with Europe generally. The care it takes of its mechanics at every stage is bound to show in concrete results. It supplies baths in many of its railroad shops and restaurants in nearly all. In still another way its rules tend to conserve the real self-respect of its men. A German railroad official of any kind invariably salutes the humblest workman he meets on his walks through the shop, which is of course reciprocated. Or, in the interest of technical accuracy, every workman salutes any official he meets going through the shop and the salute of even the humblest is invariably returned by the official, however high he be. In fact, the very pinnacle of the railroad administration will return such a salute. This is bound to and does have a good effect on the men, showing them that the highest official in the service is not superior to the rule of politeness.

The Asphalt Ready Roofing Company, 9 Church street, New York, has been remodeling its works at Jones Point, N. Y., and expects to have completed a new mill for manufacturing asphalt shingles sometime between June 1 and 15, when these shingles will be put on the market.

The Cleveland Shop Superintendents and Foremen's Club will be addressed May 17 by E. C. Peck, superintendent of the Cleveland Twist Drill Company, on the subject of "Reamers."



## General Electric Company's Report

Net Profits \$2,015,931 Greater Than in 1911

The General Electric Company has issued its twenty-first annual report, covering the operations of the fiscal year ended December 31, 1912. It shows an increase in net profits of \$2,015,931 over the amount realized in the preceding year. The income account is as follows, compared with 1911:

	1912.	1911.
Total Receipts .....	\$94,185,015	\$73,394,377
Expenses and interest.....	81,606,279	62,831,572
Net profits .....	12,578,736	10,562,805
Dividends paid .....	6,213,174	5,806,344
Net surplus for the year.....	6,365,562	4,756,461
Previous surplus.....	29,019,892	23,022,706
Total surplus .....	35,385,454	29,019,892
Less: Stock dividend .....	23,354,310	.....
Surplus at December 31.....	\$12,031,144	\$29,019,892

The balance sheet as of December 31, 1912, is as follows:

Assets.	
Patents, franchises and good-will.....	\$1.00
Cash .....	13,507,225.00
Stocks and bonds.....	23,325,070.38
Notes and accounts receivable.....	26,950,244.90
Due from affiliated companies.....	4,099,062.64
Installation work in progress.....	686,480.74
Merchandise inventories.....	37,242,818.83
Factory plants .....	24,556,110.59
Real estate, buildings, etc., other than factory plants	1,575,447.00
Furniture and fixtures, other than in factories.....	3.00
Total .....	\$131,942,464.08
Liabilities.	
Debtenture bonds.....	\$12,293,000.00
Accounts payable .....	4,140,699.97
Accrued taxes .....	265,444.98
Advance payments on contracts.....	257,336.51
Accrued interest on debtentures.....	197,543.76
Dividend payable January 15, 1913.....	1,555,294.00
Capital stock issued.....	101,202,000.00
Surplus .....	12,031,144.86
Total .....	\$131,942,464.08

From the accompanying remarks of President C. A. Coffin the following extracts are taken:

The value of orders received during the year was \$102,934,788. The amount of sales billed for the year was \$89,182,185.80. The foregoing statements include for the first time the business formerly conducted by the Fort Wayne Electric Works, the Sprague Electric Company and the National Electric Lamp Company.

The competition referred to in last year's report has continued to increase in severity, with the result that the percentage of profit realized from the sales of apparatus has materially diminished.

The manufacturing facilities of the company have been substantially enlarged in order to provide for the increasing volume of business. The factory floor area which in 1908 was 7,000,000 sq. ft., had grown in 1912 to 12,160,000 sq. ft. The growth and extent of the company's interests and operations are evidenced by the number of employees in the factories, offices and subsidiary companies, the total number of such employees being in excess of 60,000.

The expenditure of \$539,956.93 during the year for the purchase of patents, for applications and licenses under patents and for miscellaneous patent expense, has been charged to profit and loss, and the patent account remains at \$1.

The stocks and bonds owned by the company have a par value of \$23,013,764.54 and are carried at a book value of \$23,325,070.38 at December 31, 1912. The principal change from last year is the transfer into the various asset accounts of the General Electric Company of its investment in the National Electric Lamp Company.

On January 31, 1893, the book value of the Schenectady, Lynn and Harrison plants was \$3,958,528.21. During the 20 years to December 31, 1912, expenditures have been made, including the cost of the Pittsfield, Erie, Fort Wayne, Sprague and National Lamp plants, aggregating \$57,941,511.78, making a total of \$61,900,039.99. The company has written off during the 20 years \$37,343,929.40, leaving the book value of those plants December 31, 1912, at \$24,556,110.59.

On July 25, 1912, the board of directors authorized an issue of \$60,000,000 40-year debtenture bonds to be sold from time to time as required. Pursuant to this authority, there have been sold \$10,000,000 of these debtentures bearing interest at the rate of 5 per cent. per annum.

For the purpose of recouping the stockholders in part for dividends passed or reduced during the years 1893 to 1902, the board of directors on October 11, 1912, declared a stock dividend of 30 per cent. out of surplus.

## Papers for the Baltimore Meeting of Mechanical Engineers

A statement has been issued of the papers to be presented at the coming spring meeting of the American Society of Mechanical Engineers in Baltimore, May 20 to 23. The list includes the following:

"Present Operation of Gas Engines Using Blast-Furnace Gas as Fuel," by Charles C. Sampson, gas engineer of the Illinois Steel Company, Joliet, Ill., to be read at the gas power session of the meeting on Wednesday morning, May 21. This paper nearly in full is printed elsewhere in this issue.

A group of papers to be considered in a simultaneous session on the same morning is as follows: "Test of a Hydraulic Buffer," by Carl Schwartz, first assistant engineer of the New York Central Railroad, New York; "The Present Condition of the Patent Law," by Edwin J. Prindle, of Prindle & Wright, New York City, a part of which paper was printed in *The Iron Age* of April 17; "Shading in Mechanical Drawing," by Theodore W. Johnson, professor of mechanical drawing at the United States Naval Academy, Annapolis; "Cost of Upkeep of Horse-Drawn Vehicles Against Electric Vehicles," by W. R. Metz, superintendent of buildings, Government Printing Office, Washington, the leading points of which paper were presented in *The Iron Age* of April 17.

On Thursday morning, May 22, are to be presented the following papers under what has been styled a fire protection session: "The Baltimore High-Pressure Fire Service," by James B. Scott, consulting engineer, Baltimore; "National Standard Hose Couplings and Hydrant Fittings for Public Fire Service," by F. M. Griswold; "Department of City Conflagration," by Albert Blauvelt, associate manager Western Factory Insurance Association, Chicago; "Allowable Height and Area in Factory Buildings," by Prof. Ira H. Woolson, consulting engineer of the National Board of Fire Underwriters, New York City; "The Protection of Main Belt Drives with Fire Retardant Partitions," by C. H. Smith, engineer, Associated Factory Mutual Fire Insurance Companies, and "The Life Hazard in Crowded Buildings Due to Inadequate Exits," by H. F. J. Porter, secretary of the Efficiency Society, New York City.

Reports of special committees are to be considered at the business meeting, which will be held the first thing on Wednesday morning, including reports on the myriawatt, involute gears, standardization of catalogues, code of ethics and the National Museum.

## French Iron and Steel Output in 1912

According to the returns of the Comité des Forges de France, the pig-iron output, including ferromanganese, for 1912 in France was 4,871,992 metric tons, as compared with 4,426,469 tons in 1911, an advance of 10 per cent. The raw materials used in 1912 amounted to 12,016,358 tons of domestic iron ore, 1,126,626 tons of imported iron ore, 225,296 tons of manganese ore and 841,279 tons of scrap, cinder, etc. The number of blast furnaces in operation averaged 125 and the number out of blast 23.

The production of steel ingots in 1912 amounted to 4,078,352 tons, an increase of 10 per cent. over the previous year. Crucible and electric furnace ingots amounted to 37,363 tons. Acid Bessemer steel showed a decline, but all other descriptions increased. In semi-finished steel the total production was 1,977,088 tons in 1912 as compared with 1,744,148 tons in 1911. The electric furnace contributed 5,393 tons of the 1912 total, as compared with 4,919 tons in 1911. The output of finished steel products in 1912 totaled 3,028,799 tons, or 14.6 per cent. more than in 1911 and 30.7 per cent. more than in 1910. Of this total rails amounted to 531,304 tons, beams and channels to 483,063 tons and sheets and plates to 569,403 tons.

The New York office of the Alliance Machine Company, Alliance, Ohio, of which John J. Utech is manager, has been removed to the Trinity Building, 111 Broadway.

ESTABLISHED 1855

# THE IRON AGE

Published Every Thursday by the  
**David Williams Company**  
 239 West 39th Street New York

W. H. Taylor - *President and Treasurer*  
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## Branch Offices

Chicago: Otis Building Philadelphia: Real Estate Trust Bldg.  
 Pittsburgh: Park Building Cleveland: American Trust Building  
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Entered at the New York Post Office as Second-class Mail Matter

Subscription price: United States and Mexico, \$5.00 per year; to Canada, \$7.50 per year; to other foreign countries, \$10.00 per year.

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## Iron Ore Shortage Scare Abating

That the Swedish government, as indicated elsewhere in this issue, is now legislating to permit increased shipments of iron ore from the Lapland mines which the well-known Grängesberg Company has been working for some years is another sign of recovery from the general scare of a few years ago concerning iron ore supply. The restrictive agreement with the same company in 1907, which was then widely commented on, came one year after the alarmist report of Professor Törnebohm to the Swedish government and reflected the widespread belief in Sweden that the world's iron industry had ahead of it about a 50 years' supply of iron ore. Professor Törnebohm's estimates for the various iron-producing countries, which credited Sweden with reserves equivalent to 611,000,000 tons of metallic iron, assigned to the United States a total of 603,000,000 tons of metallic iron. This comparison of the iron ore resources of the two countries, which was soberly put forward seven years ago, becomes well-nigh ludicrous in view of what has been developed by the careful investigations of experts in this country in the interval. And now comes the action of the Swedish government, signifying that what was done six years ago to safeguard against an iron ore scarcity was ill-considered and based on estimates that were far short of the facts. It was understood in 1907 that the Swedish iron industry was being protected in the limitation of iron ore exports to Germany and other countries. It is interesting now to note that the Swedish government advisers are moved by the fear that the German buyers of iron ore in the Rhineland and Westphalian districts may succeed in making themselves independent of the Swedish deposits, and therefore that the market may well be given what it will take while prices are highly profitable. In fact, the Swedish experts suggest the possibility that the iron ore market may go to a lower level by 1932, when the present government contract with the company exporting the North Sweden ores expires.

The Great Northern iron ore lease to the United States Steel Corporation was put through when the iron trade of this country was swayed by the same pessimistic view of ore supply that led Sweden to limit the contributions of her mines to German and other foreign blast furnaces. That Sweden is making haste to increase her revenues by enlarging her iron ore exports, just as the undoing of the Great Northern lease is under way in this country, seems to indicate that the iron ore famine scare has been quite thoroughly dispelled.

## A Threat by the Administration

Secretary Redfield, of the Department of Commerce, according to dispatches from Washington, declares that if reductions in wages of workmen should follow the enactment of the tariff bill the investigating powers of his department will be invoked to establish whether they are justified. It is further stated that President Wilson has indicated his general approval of Mr. Redfield's ideas. This attitude of the Administration is declared to be due to the statements made by representatives of certain industries that reductions in wages would follow reductions in duties.

We do not believe that manufacturers who made

such assertions intended that they should be taken as threats. They undoubtedly meant to convey the impression that the competition from abroad which would result from the lowering of duties could only be met by reductions in the cost of production here, and among these would necessarily come the lowering of wages paid to workmen in such industries. No employer reduces wages willingly. In the remote past, wages were attacked whenever business fell off because that seemed to be the point of least resistance in securing lower cost of production. That time, however, long since passed by. In these latter days, wages are the last factor in productive cost to be attacked in the endeavor to secure a cheaper output. Every effort is made to effect economies in other directions and to avoid reductions in wages until such a step is absolutely imperative.

We believe that it can safely be assumed that, even if the Underwood bill becomes a law in the precise shape in which it leaves the House of Representatives, no manufacturer will change his methods or his policies until he finds by actual experience that it is necessary for him to cut his costs for the purpose of holding his trade. Manufacturers will make sacrifices for this purpose, but it is to be hoped that the pressure on our markets from abroad will not be so great as to compel a widespread re-arrangement of the present relations between American employers and their workmen. Such a condition of affairs would be indeed deplorable. It would undoubtedly be made far worse for all concerned if the United States Government should seek to interfere in the manner suggested by Secretary Redfield.

### Simplifying Patent Legislation

The Supreme Court has promulgated new rules of practice for the courts of equity of the United States which are considered revolutionary in their effects upon patent litigation. Briefly stated, a suit for infringement goes on the calendar for trial by the end of 110 days following the filing of the bill of complaint; demurrers and pleas are abolished; and cases must be tried in open court, testimony by deposition of witnesses being abolished, unless by order of the court, except that of expert witnesses, and, under a Federal statute which the rules of the court cannot override, of witnesses living more than 100 miles from the place of trial. Thus proceedings in equity are robbed of the almost endless possible complications which have sometimes kept litigation alive for years until a final decision was reached.

The new rules are supposed to have had their inception in certain such cases tried in recent years, where the proceedings were so protracted and the volume of depositions so great that the printed transactions covered thousands of pages, calling forth the rebukes of judges.

Those who have had experience with the trial of patent cases will be interested in the extreme simplicity of the bill of complaint and the answer, as laid down by the new rules, as follows:

Hereafter it shall be sufficient that a bill in equity shall contain, in addition to the usual caption:

1. The full name, when known, of each plaintiff and defendant, and the citizenship and residence of each party. If any party be under any disability the fact shall be stated.

2. A short and plain statement of the grounds upon which the court's jurisdiction depends.

3. A short and simple statement of the ultimate facts upon which the plaintiff asks relief, omitting any mere statement of evidence.

4. If there are persons other than those named as defendants who appear to be proper parties, the bill should state why they are not made parties—as that they are not within the jurisdiction of the court or cannot be made parties without ousting the jurisdiction.

5. A statement of and prayer for any special relief pending the suit or on final hearing, which may be stated and sought in alternative forms. If special relief pending the suit be desired the bill should be verified by the oath of the plaintiff, or someone having knowledge of the facts upon which such relief is asked.

If the defendant move to dismiss the bill or any part thereof, the motion may be set down for hearing by either party upon five days' notice, and, if it be denied, answer shall be filed within five days thereafter or a decree *pro confesso* entered.

The defendant in his answer shall in short and simple terms set out his defense to each claim asserted by the bill, omitting any mere statement of evidence and avoiding any general denial of the averments of the bill, but specifically admitting or denying or explaining the facts upon which the plaintiff relies, unless the defendant is without knowledge, in which case he shall so state, such statement operating as a denial. Averments other than of value or amount of damage, if not denied, shall be deemed confessed, except as against an infant, lunatic or other person *non compos* and not under guardianship, but the answer may be amended, by leave of the court or judge, upon reasonable notice, so as to put any averment in issue, when justice requires it. The answer may state as many defenses, in the alternative, regardless of consistency, as the defendant deems essential to his defense.

The answer must state in short and simple form any counter-claim arising out of the transaction which is the subject matter of the suit, and may, without cross-bill, set out any set-off or counter-claim against the plaintiff which might be the subject of an independent suit in equity against him, and such set-off or counter-claim, so set up, shall have the same effect as a cross-suit, so as to enable the court to pronounce a final judgment in the same suit both on the original and cross-claims.

The new rules of practice will doubtless be received with favor in the manufacturing industries. Infringements should be less frequent, it is said. In the past many actions have been brought which have never come to trial. The records of the offices of clerks of court have been filled with cases long since abandoned by the plaintiffs, but still hanging over the heads of the defendants. These cases are now disappearing automatically. Others are being withdrawn voluntarily. The cause of the man with a slender purse will lose some of its handicap, in that ruinous delays, resulting from bringing into play one technicality after another, at great cost to both parties, will no longer be tolerated by the courts. The advantage of the services of skilled patent attorneys and experts will remain as before, of course.

The rule governing the taking of testimony, which is considered essentially important in several ways, is as follows:

In all trials in equity the testimony of witnesses shall be taken orally in open court, except as otherwise provided by statute or these rules. The court shall pass upon the admissibility of all evidence offered as in actions at law. When evidence is offered and excluded, and the party against whom the ruling is made excepts thereto at the time, the court shall take and report so much thereof, or make such a statement respecting it, as will clearly show the character of the evidence, the form in which it was offered, the objection made, the ruling, and the exception. If the appellate court shall be of opinion that the evidence should have been admitted, it shall not reverse the decree unless it be clearly of the opinion that material prejudice will result from an affirmance, in which event it shall direct such further steps as justice may require.

Where testimony by deposition is permitted, the affidavits must be filed without delay, "those of the plaintiff within 60 days from the time the cause is at



issue; those of the defendant within 30 days from the expiration of the time for the filing of plaintiff's depositions; and rebutting depositions by either party within 20 days after the time for taking original depositions expires." The court may direct that the testimony of expert witnesses, "whose testimony is directed to matters of opinion, be set forth in affidavits, but those of the plaintiff must be filed within 40 days after the cause is at issue; those of the defendant within 20 days after plaintiff's time has expired, and rebutting affidavits within 15 days after the time for filing original affidavits. Should the opposite party desire the production of the affiant (the expert) for cross-examination, the court shall, on motion, direct that such cross-examination and any re-examination take place before the court upon the trial, and unless the affiant is produced and submits to cross-examination and re-examination in compliance with such direction, his affidavit shall not be used as evidence in the cause."

These instances are cited to demonstrate the effort of the Supreme Court to expedite and simplify the trial of cases. The rules apply to all other actions in equity, but the bearing is probably most important in litigation as to patents.

### Progress of Tariff Revision

The consideration of the tariff bill has been making steady progress in the House of Representatives the past week. The members of the majority are under such perfect control that few amendments have been made, and they have consisted wholly of small matters decided upon by the House leaders. The metal schedule was reached on Wednesday, April 30, and the proceedings then became interesting.

On that day Representative A. Mitchell Palmer of Pennsylvania had charge of the bill. The only changes made in the metal schedule were those proposed by Mr. Palmer for the Ways and Means Committee. These changes were almost wholly phraseological, to clarify the intent of certain provisions. The amendments offered by Mr. Palmer and adopted were:

1. The insertion of language assuring that the rate of 15 per cent. in the pig iron schedule should be applicable to "other alloys used in the manufacture of steel."
2. The insertion of language making the proposed rate of 35 per cent. on anti-friction balls, ball bearings, and roller bearings, applicable also to "parts thereof."
3. The inclusion of tin plates coated with metal or nickel, by dipping, or other process, under the rate of 20 per cent. proposed to be placed on tin plates.
4. The addition of cobalt and vanadium to the list of articles, such as tungsten and chromium, which are to be dutiable at 10 per cent.
5. Making clear the intention of the committee to make dutiable at 15 per cent. all steels "by whatever process, such as nickel, cobalt," etc.
6. An amendment to make sure that all steel strips have the rate as steel rolled into wire, namely, 10 per cent.
7. An amendment making clear that the rate of 15 per cent. on bolts is for bolts of iron or steel.

Mr. Palmer was frequently reminded from the Republican side of the fact that the Bethlehem Steel Company was in his district.

Representative Stanley of Kentucky (Democrat), who was chairman of the special committee that made an inquiry into the affairs of the United States Steel Corporation, spoke in support of the provision transferring iron ore to the free list. He insisted it was ridiculous for any one to assert that American workingmen were employed in the iron and steel industry. He insisted that the mines of the Steel Corporation in Minnesota and other States were filled with aliens, half of whom could not speak the English language. "In Birmingham they not only work foreign labor but they work slave labor," said Mr. Stanley. "They work convicts both in the mines and at the furnaces—that is of the Steel Corporation."

Now Birmingham happens to be the home of Representative Underwood. He protested against the charge made

by Mr. Stanley: "I do not desire to contradict the gentleman, but I must do justice to my own constituency. I do not know where the gentleman got his information, but it is absolutely unwarranted by the facts. There has never been convict labor in any blast furnace in Alabama."

"If I used the words 'blast furnaces' it was an error," replied Mr. Stanley, "I referred to iron mines."

"There never was any convict labor employed in the iron mines of my State," resumed Mr. Underwood.

The liveliest discussion of the day was over the rates proposed by the bill for automobiles. Mr. Sherley of Kentucky said that if there was any industry which had demonstrated its ability to stand on its feet in competition with the manufacturers of the world it was the American automobile industry.

The Underwood bill, according to present plans, will go to the Senate this week. Senator Simmons, chairman of the Senate Finance Committee, stated on Monday that the Finance Committee would probably hold it for about two weeks perfecting amendments, and then report it to the Senate. He also announced that the committee would give no public hearings on the bill. It is believed that the metal schedule will be amended in the Senate. Senator DuPont of Delaware and Senator Burton of Ohio have announced their intention of offering amendments in regard to ferromanganese.

### Koppers Coke and Benzol Plant at Sparrows Point

H. Koppers Company, Chicago, has just closed a contract for a large installation of by-product coke and gas ovens for the Maryland Steel Company, Sparrows Point, Md. In addition to the recent order received from the Laclede Gas Light Company, St. Louis, the Koppers company is now erecting a plant for the Woodward Iron Company, Woodward, Ala., a repeat order; for the Inland Steel Company, Indiana Harbor, Ind., and the Republic Iron & Steel Company, Youngstown, Ohio. The construction about to be undertaken at Sparrows Point follows a small order for six ovens which the Maryland Steel Company gave to the Koppers company a year ago. There will be two batteries, each containing 60 Koppers cross regenerative by-product ovens, each oven approximately 37 ft. 4 in. long and 9 ft. wide at the pusher end and 21 in. wide at the discharge end and having a capacity of 540 cu. ft. of coal, equivalent to 13¼ tons of coke per charge. There will also be the necessary by-product plant for the recovery of tar and the Koppers direct process for the manufacture of ammonium sulphate. The by-product plant is to be constructed with three lines of apparatus, each line having sufficient capacity for 60 of the ovens operating on 15 hours coking time. There is also included the necessary coal bin, elevating and conveying system, also necessary coke handling apparatus to screen and deliver coke into the storage bin near the blast furnaces.

The contract covers in addition a light oil plant for extracting benzol from all the gas produced by the two batteries of ovens, except 6,000,000 cu. ft. per day of rich gas, together with the necessary distilling apparatus to deliver the benzol vapor to the rich gas and the necessary condensing apparatus to condense crude benzol. The Sparrows Point plant will furnish gas to the city of Baltimore, and the St. Louis plant will furnish gas to the city of St. Louis.

In the near future the H. Koppers Company will install in connection with one of its plants a complete benzol producing plant. Benzol produced in this manner will be adopted in the United States, it is anticipated, to replace gasoline for motor vehicle use. It is now being used in a number of European countries for that purpose.

### New Coke Ovens at Johnstown

The Cambria Steel Company, Johnstown, Pa., has awarded the contract for a battery of 28 by-product coke ovens to the Gas Machinery Company, Cleveland, Ohio, of which W. E. Hartman is consulting engineer. The Cambria Steel Company is now operating a by-product plant comprising 370 ovens. It is expected that these will eventually be replaced by new ovens. The present contract provides for the installation of the first battery and tentative plans call for additions which will ultimately total 500 ovens.

### A Steel Culvert Rate Case

The Klauer Mfg. Company, Dubuque, Iowa, manufacturer of iron and steel culverts, has filed with the Interstate Commerce Commission a complaint against the Archon and 26 other railroads operating in Western Classification territory. It charges that the railroads, operating in conjunction with the National Corrugated Culvert Manufacturers' Association, have fixed rates in that territory so that manufacturers are limited in their markets and must confine their activities within a certain sphere. It is stated that the culvert manufactured out of the plate or sheet of No. 16 gauge or thicker is given a rate much lower than when manufactured out of the plate or sheet of No. 18 gauge, when there are no transportation conditions on either in bulk, weight, cost, value or risk of transportation which justifies any material difference in the rate. It is also stated that such culverts nested in packages or loose are given the same rating and the same charges as not nested, when they should carry a less rate. The claim is made that there should be a reduction in the carload ratings from the fourth to the fifth class, and that in view of the increasing volume of production of culverts there should be a general readjustment of rates.

"The ratings originated," says the complaint, which is brought by the Railroad Commission of Iowa on behalf of the Klauer Company, "with a desire on the part of certain factories to destroy trade competition, the idea being that higher freight rates would prevent shipments moving any great distance, thus giving each factory control of the territory in its immediate vicinity, and there is no denying that they have such effect with articles on which freight charges represent such a high percentage of the cost, that is, 5 to 12 per cent."

The railroads named as defendants have been given 30 days in which to answer the complaint, and the commission is making arrangements to make a comprehensive investigation.

### The New Dock Charges for Lake Iron Ores

MARQUETTE, MICH., May 5, 1913.—While the tariffs for the transportation of ore to the shipping ports remain the same as in recent years—40 cents from the Gogebic range to Ashland, 40 cents from the Menominee and Marquette ranges to Escanaba, 30 cents from the Humboldt district of the Marquette range to Marquette, and 25 cents from the Ishpeming and Negaunee field of the Marquette range to Marquette—a charge for dockage is a new feature. This is 5 cents a ton, which covers storage in cars at dockyards, unloading from cars to docks and loading from docks to vessels. Heretofore the railroads have imposed no extra tariff for this service. In order to obtain the five-cent rate, ore must be loaded into the vessel within ten days from arrival at the yards. When not loaded into vessels within that time an additional charge of  $\frac{1}{4}$  cent a ton a day is made.

The railroad managers assert that the dockage charge is a necessity, both on account of the increased cost of handling the ore at the docks and the alleged abuse of the use of cars and dock room by some of the shipping concerns. It is claimed that in the past thousands of tons of ore have been held in the piers and in cars awaiting the arrival of vessels to take it away, this condition continuing for many days at a time. On the other hand, the mining companies declare the dock charge and the storage penalty unreasonable. Complaint has been made to the Interstate Commerce Commission and that body has the matter under consideration. The smaller concerns with no boats of their own are particularly affected. It is pointed out that to avoid the storage tax it often would be necessary to put the ore in stock at the mines. As this would entail an additional charge of 10 to 15 cents a ton for reloading, it is questionable if this method would be profitable. There is great interest in the outcome of the protest made at Washington. While the mining companies are united in opposition to the new tax, only one—Ferdinand Schlesinger's Newport company of Milwaukee—has filed formal complaint. This is in the nature of a test case.

March merchandise exports exceeded the imports by over \$32,015,000 in value. The total imports were \$155,358,000 and the exports \$187,374,000. Nine months' excess of exports amounted to \$506,257,000.

### Plans for the Great Northern Ore Properties

Some interesting statements concerning the plans of the trustees of the Great Northern Iron Ore Properties are given in the report just issued for the year ending December 31, 1912. The dividends on various stocks held by the trustees amounted last year to \$2,637,797, which with interest made the total receipts \$2,704,152. The disbursements were \$73,172 for salaries and expenses and \$750,000 as a distribution to holders of certificates. The balance of undistributed income was thus \$1,572,073, making the total undistributed income on hand December 31, \$3,453,053.

The work of developing the Great Northern properties will require considerable money the coming year. The Great Western Mining Company (subsidiary of the United States Steel Corporation), whose lease on the Great Northern iron mines will be terminated at the end of 1914, has permitted the trustees to enter upon properties which will not be worked in 1913 and 1914, so as to prepare them for after operation. Contracts have been made for stripping the Dunwoody (formerly called the Adams), Whiteside and Smith mines, which are estimated to contain 28,123,445 tons of ore. This development is expected to put the trustees in a position to mine and sell some ore this year, a larger amount in 1914 and an increased output in 1915 and thereafter. It has been estimated that an expenditure of \$1,000,000 will make 5,500,000 tons of ore available in the Whiteside mine, that \$2,000,000 will make 8,000,000 tons of ore available in the Dunwoody mine, while the spending of \$120,000 will make 600,000 tons available in the Smith mine.

Expenditures will be made in due time also at the Enterprise, South Agnew and Wabigon mines, it being estimated that a total outlay of \$2,700,000 will make available at these properties 11,800,000 tons of ore, while an outlay of \$5,000,000 will make available 12,500,000 tons of standard ore and 3,725,000 tons of ore concentrated by washing, in Section 16, Town 56, Range 23.

### National Association of Manufacturers

The National Association of Manufacturers will hold its annual convention this year, May 19, 20, 21, at Detroit, Mich. This organization, composed of 4000 of the largest firms in the country, has in recent years held its annual sessions at New York, the importance of its discussions and the prominence of its speakers attracting an attendance of approximately a thousand representatives of large employers throughout the United States. At the convention in New York last year strong representations were made to the board of directors that the interests of the organization would be promoted if the plan were adopted of holding the annual sessions in different parts of the country. While urgent applications were received to hold the 1913 convention in various cities, Detroit was selected on account of its geographical position, its variety of manufactures, its natural attractions as a convention center and its ability to entertain large bodies of delegates.

The proceedings this year will be of exceedingly great interest to manufacturers and employers everywhere on account of the change in the National Administration, the contemplation of new tariff schedules, the legislative enactments designed for the regulation of business, both big and little, the general economic unrest, and the ever-sharpening aspects of the labor situation. Notable features will be addresses and committee reports on such subjects as accident prevention and workmen's compensation, industrial education, fire prevention, export trade, patent reform, currency and banking, immigration, interstate commerce and federal incorporation, consular reform, bankruptcy and uniform State laws.

Although an Eastern banking house has endeavored to renew negotiations for the purchase of the La Belle Iron Works, Steubenville, Ohio, it is stated that no option has been given and will not be until the identity of the real purchasers is disclosed. The report that Charles M. Schwab is interested in the proposition is officially denied.

The Atlantic Blaugas Company has removed from 381 Fourth avenue to 25 Madison avenue, New York.



## Increase in Pig-Iron Output

### A Gain of 2600 Tons a Day in April

#### Capacity Now Active Represents February Rate of Production

Our blast furnace statistics for April show a total production of 2,752,761 gross tons of coke and anthracite pig iron, or 91,759 tons a day, against 2,763,563 tons in the 31 days of March, or 89,147 tons a day. The increase was thus 2600 tons a day, though production was still 600 tons below the February rate. As our statistics of active capacity on April 1 counted as in blast all furnaces which had been stopped by floods but had resumed before the publication of the statistics on April 10, the gain we now show in active furnaces in the past month—from 293 April 1 to 298 May 1—is smaller than might be expected and representing only three stacks that had gone out because of the floods—Franklin at Columbus, Ohio, and two River furnaces at Cleveland. The capacity in blast May 1 was 92,479 tons a day, against 89,915 tons a day one month previous.

#### Daily Rate of Production

The daily rate of production of coke and anthracite pig iron by months, from April, 1912, is as follows:

Daily Rate of Pig-Iron Production by Months—Gross Tons.			
	Steel works.	Merchant.	Total.
April, 1912 .....	61,024	18,157	79,181
May .....	62,018	19,033	81,051
June .....	60,799	20,559	81,358
July .....	58,168	19,570	77,738
August .....	59,464	21,582	81,046
September .....	59,102	23,026	82,128
October .....	62,820	23,952	86,772
November .....	62,817	24,878	87,695
December .....	63,770	25,996	89,766
January, 1913 .....	63,921	26,251	90,172
February .....	64,005	28,364	92,369
March .....	61,448	27,699	89,147
April .....	64,658	27,101	91,759

#### Output by Districts

The accompanying table gives the production of all coke and anthracite furnaces in April and the four months preceding.

#### Monthly Pig-Iron Production—Gross Tons.

	Dec. (31 days)	Jan. (31 days)	Feb. (28 days)	Mar. (31 days)	Apr. (30 days)
New York .....	184,899	188,943	180,789	188,335	189,818
New Jersey .....	5,609	5,833	5,644	11,100	10,154
Lehigh Valley .....	91,393	99,470	93,552	103,428	100,141
Schuylkill Valley ..	80,513	80,223	65,362	78,157	78,225
Lower Susquehanna and Lebanon Val. ..	66,161	72,172	69,205	76,612	68,682
Pittsburgh district...	626,688	626,118	569,457	639,832	648,223
Shenango Valley ..	149,404	152,065	145,464	132,536	136,685
Western Pennsylv'a.	163,473	163,563	147,279	166,825	167,251
Maryland, Virginia and Kentucky ....	58,526	61,026	61,704	65,808	57,885
Wheeling district ..	124,708	111,595	114,979	103,003	119,251
Mahoning Valley ..	245,691	259,756	255,425	235,542	248,425
Central and North- ern Ohio .....	246,666	246,709	208,822	218,169	209,531
Hocking Valley, Hanging Rock and S. W. Ohio ..	38,108	29,247	35,981	40,354	31,490
Chicago district ....	411,213	402,408	357,700	392,297	388,061
Mich., Minn., Mo., Wis., Col., Wash.	84,190	93,750	79,875	88,671	83,773
Alabama .....	171,090	180,790	164,642	186,940	181,256
Tennessee .....	34,405	31,863	30,457	35,954	33,910
Total .....	2,782,737	2,795,331	2,586,337	2,763,563	2,752,761

#### Production of Steel Companies

Returns from all furnaces of the United States Steel Corporation and the various independent steel companies show the following totals of product month by month. Only steel-making iron is included in these figures, together with ferromanganese, spiegeleisen and ferrosilicon. These last, while stated separately, are also included in the columns of "total production."

#### Production of Steel Companies—Gross Tons.

	—Pig. Total production—			Spiegeleisen and ferromanganese		
	1911.	1912.	1913.	1911.	1912.	1913.
January .....	1,128,448	1,483,153	1,981,560	8,360	22,622	15,633
February .....	1,185,782	1,550,995	1,792,154	12,821	15,950	20,131
March .....	1,518,063	1,827,792	1,904,878	11,784	11,538	20,546
April .....	1,434,142	1,830,717	1,939,751	10,657	11,104	23,108
May .....	1,310,378	1,922,557	.....	13,641	20,518	.....
June .....	1,281,241	1,823,958	.....	22,611	26,685	.....
July .....	1,316,646	1,803,205	.....	17,067	26,522	.....
August .....	1,460,610	1,843,404	.....	14,579	24,225	.....
September .....	1,490,898	1,773,073	.....	17,757	22,484	.....
October .....	1,560,884	1,947,426	.....	19,697	27,252	.....
November .....	1,452,907	1,884,524	.....	19,678	17,461	.....
December .....	1,453,446	1,976,870	.....	20,068	18,523	.....

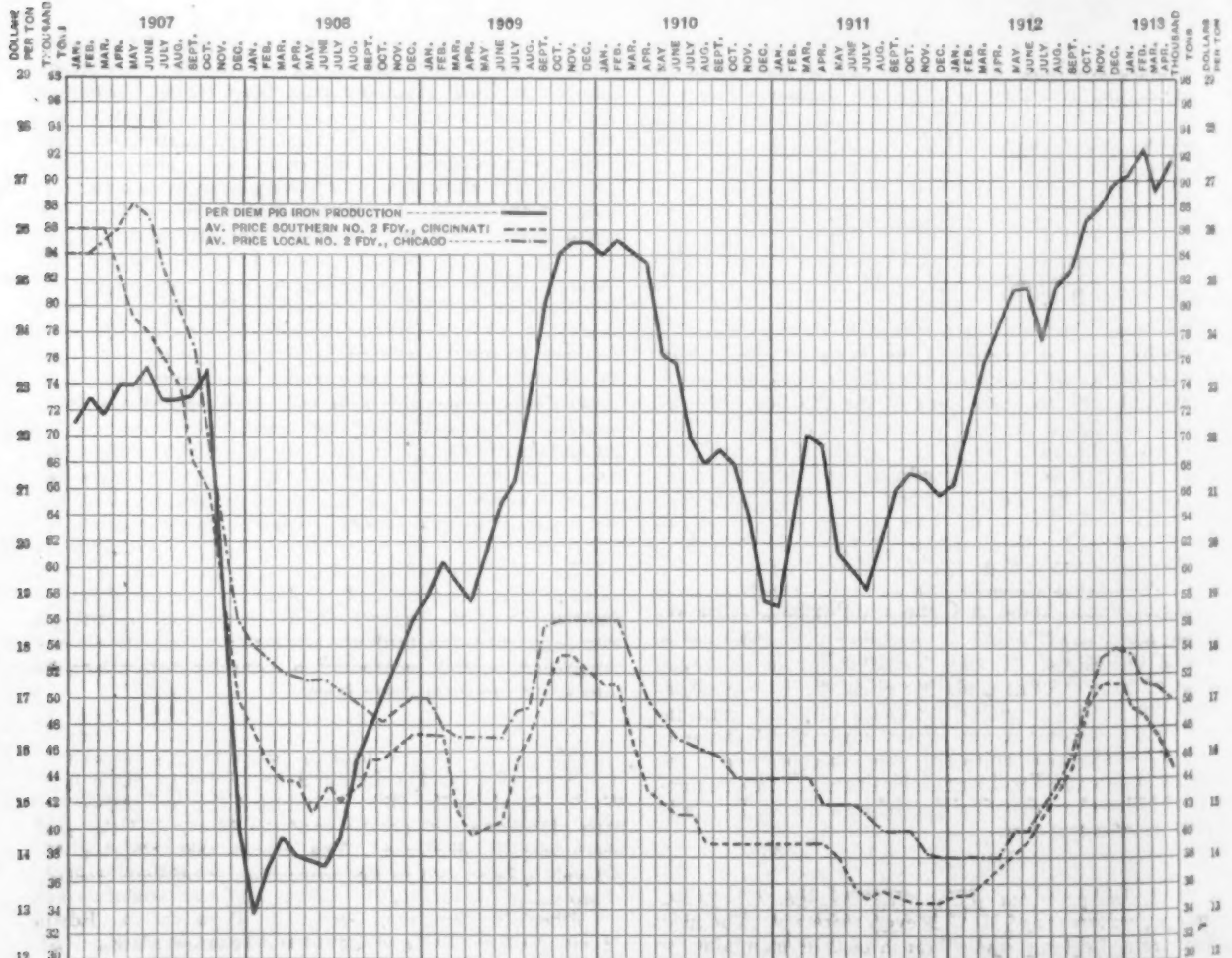


Diagram of Daily Average Production by Months of Coke and Anthracite Pig Iron in the United States from January 1, 1907, to May 1, 1913; Also of Monthly Average Prices of Southern No. 2 Foundry Iron at Cincinnati and Local No. 2 Foundry Iron at Chicago District Furnace



## Capacity in Blast May 1 and April 1

The following table shows the daily capacity, in gross tons, of furnaces in blast May 1 and April 1 by districts:

## Coke and Anthracite Furnaces in Blast.

Location of Furnaces.	Total number of stacks.	May 1		Apr. 1	
		Number in blast.	Capacity per day.	Number in blast.	Capacity per day.
<b>New York:</b>					
Buffalo .....	19	17	5,650	18	5,748
Other New York .....	7	3	611	3	577
New Jersey .....	7	2	338	2	358
<b>Pennsylvania:</b>					
Lehigh Valley .....	22	14	3,082	15	3,162
Scranton .....	2	2	175	2	175
Schuylkill Valley .....	16	10	2,608	10	2,522
Lower Susquehanna .....	7	6	1,233	6	1,241
Lebanon Valley .....	10	7	1,057	7	1,121
Pittsburgh District .....	51	45	20,235	48	20,570
Spiegel .....	3	3	566	3	474
Shenango Valley .....	19	15	4,556	15	4,130
Western Pennsylvania .....	27	19	5,577	19	5,382
Maryland .....	4	3	839	3	867
Wheeling District .....	14	11	4,035	11	3,910
<b>Ohio:</b>					
Mahoning Valley .....	24	22	8,811	21	8,490
Central and Northern .....	24	22	7,434	19	7,050
Hocking Val., Hanging Rock & S. W. Ohio .....	15	10	1,290	7	1,025
Illinois and Indiana .....	34	33	13,335	30	12,042
Spiegel .....	2	0	0	0	0
Mich., Wis. and Minn. .....	10	8	1,730	9	1,774
Colorado, Mo. and Wash. .....	8	3	1,062	3	1,087
<b>The South:</b>					
Virginia .....	23	8	1,118	7	968
Kentucky .....	5	1	130	0	0
Alabama .....	46	25	6,172	25	6,082
Tennessee .....	20	9	1,075	10	1,160
<b>Total .....</b>	<b>419</b>	<b>298</b>	<b>92,719</b>	<b>293</b>	<b>89,915</b>

Among furnaces blown in last month were Allegheny in Virginia, one Ashland in Kentucky, Hannah in the Mahoning Valley, Franklin and two River in Ohio, Star and Lawrence in the Hanging Rock district, one Calumet, one Joliet and one Gary in the Chicago district.

The list of furnaces blown out includes the New York State Steel Company's stack at Buffalo, one Crane in the Lehigh Valley, one Carrie, one Isabella and Clinton in the

Pittsburgh district, one Detroit in Michigan and Standard in Tennessee.

## Diagram of Pig-Iron Production and Prices

The fluctuations in pig-iron production from January, 1907, to the present time are shown in the accompanying chart. The figures represented by the heavy lines are those of daily average production, by months, of coke and anthracite iron. The two other curves on the chart represent monthly average prices of Southern No. 2 foundry pig iron at Cincinnati and of local No. 2 foundry iron at furnace at Chicago. They are based on the weekly market quotations of *The Iron Age*. The figures for daily average production are as follows:

## Daily Average Production of Coke and Anthracite Pig Iron in the United States by Months Since January 1, 1907—Gross Tons.

	1907.	1908.	1909.	1910.	1911.	1912.	1913.
January .....	71,149	33,918	57,975	84,148	56,752	66,384	90,172
February .....	73,038	37,163	60,976	85,616	64,090	72,442	92,369
March .....	71,821	39,619	59,232	84,459	70,036	77,391	89,147
April .....	73,885	38,289	57,962	82,792	68,836	79,181	91,759
May .....	74,048	37,603	60,753	77,102	61,079	81,051	...
June .....	74,486	36,444	64,656	75,516	59,585	81,358	...
July .....	72,763	39,287	67,793	69,305	57,841	77,738	...
August .....	72,594	42,851	72,546	67,963	62,150	81,046	...
September .....	72,783	47,300	79,507	68,476	65,903	82,128	...
October .....	75,386	50,554	83,856	67,520	67,811	86,772	...
November .....	60,937	51,595	84,917	63,659	66,648	87,695	...
December .....	39,815	56,158	85,022	57,349	65,912	89,766	...

## The Record of Production

## Production of Coke and Anthracite Pig Iron in the United States by Months Since January 1, 1908—Gross Tons.

	1908.	1909.	1910.	1911.	1912.	1913.
Jan. ....	1,045,250	1,797,560	2,608,605	1,759,326	2,057,911	2,795,331
Feb. ....	1,077,740	1,707,340	2,397,254	1,794,509	2,100,815	2,586,337
Mar. ....	1,228,204	1,832,194	2,617,949	2,171,111	2,405,318	2,763,563
Apr. ....	1,149,602	1,738,877	2,483,763	2,064,086	2,375,436	2,752,761
May ....	1,165,688	1,883,330	2,390,180	1,893,456	2,512,582	...
June ....	1,092,131	1,930,866	2,265,478	1,787,566	2,440,745	...
July ....	1,218,129	2,103,431	2,148,442	1,793,068	2,410,889	...
Aug. ....	1,359,831	2,248,930	2,106,847	1,926,637	2,512,431	...
Sept. ....	1,418,998	2,385,206	2,056,275	1,977,102	2,463,839	...
Oct. ....	1,567,198	2,599,541	2,093,121	2,102,147	2,689,933	...
Nov. ....	1,577,854	2,547,508	1,909,780	1,999,433	2,630,854	...
Dec. ....	1,740,912	2,635,680	1,777,817	2,043,270	2,782,737	...

## Leetonia Steel Company Places Contracts

The Leetonia Steel Company, which will build an open-hearth steel plant and later sheet mills at Leetonia, Ohio, has placed a number of its contracts. The initial plant will have two 70-ton open-hearth furnaces and a 30-in. bar mill for rolling sheet bars and billets. The United Engineering & Foundry Company, Pittsburgh, was awarded the contract for the bar mill, shears, runout transfer tables and other mill equipment. The General Electric Company, Schenectady, N. Y., was given an order for all the small mill motors, and a large motor of 1500 hp. for driving the bar mill, a 500-kw. synchronous set for changing from a.c. to d.c. and a 2500-kw. high-pressure turbine. The Babcock & Wilcox Company, through its Pittsburgh office, got a contract for two boilers, each 350 hp., for the steel plants, which will utilize the waste heat from the open-hearth furnaces. The Pennsylvania Engineering Works, New Castle, Pa., was given a contract for the ladle cranes and ladles; the Alliance Machine Company, Alliance, Ohio, one 2-ton stiff leg crane for the bar mill, and the Morgan Engineering Company, Alliance, Ohio, a 5-ton and a 25-ton electric crane; the Meehan Boiler & Construction Company, Lowellville, Ohio, the steelwork for the gas producers, stock and gas holders. All the brickwork for producers, furnaces, etc., will be built by the company itself.

The Bollinger-Andrews Company, Pittsburgh, received a contract for removing to Leetonia the open-hearth building of the Passaic Steel Company at Passaic, N. J., 107 x 200 ft., and containing 600 tons of steel. This building is very substantial and will carry a 135-ton crane. The same company will also move a Wellman-Seaver charging machine and a 75-ton Morgan crane from Passaic to Leetonia. Contracts are yet to be placed for the bar mill and shear building, gas producer building, the brick for the furnaces and soaking pits and two 600-hp. boilers for the blast furnaces. These contracts will likely be placed within the next few days. Albert P. Meyer is president; Archie G. Smith, vice-president and general manager; N. J. McKeefrey, treasurer, and H. C. Meyer, secretary. The main offices are at Leetonia, and a branch office is maintained in room 805 First National Bank Building, Pittsburgh.

## Customs Decisions

## Metal Window Parts

The Board of United States General Appraisers has taken adverse action on protests by J. G. Braun, Chicago, regarding the classification under the tariff act of 1909 of finished window sash parts, frames, etc., constituting a complete window frame or casement of iron. Duty was assessed at the rate of 45 per cent. under paragraph 199, as "manufactures of metal." The importer set up the contention that the articles should be admitted at the lower rates provided for structural shapes under paragraph 121. The board holds that the finished window frames are excluded by the express intention of Congress from the classification thus sought.

## Steel Strips

The J. Wilkes Company, New York, was sustained by the board in a contention affecting the classification under the present law of rolled razor steel in strips of about 200 to 300 ft. long. The importer objected to the assessment of an additional duty of 4/10 of 1c. per lb. on the material under the provisions of paragraph 137. The collector made the extra assessment on the ground that the strips had been polished or brightened to the degree contemplated by the paragraph referred to. The importer testified that the strips received only the polish acquired incidentally in the process of cold rolling. In upholding this contention, Judge Fischer holds that the steel is not advanced beyond the condition of cold rolled, smoothed only, and that the collector erred in exacting the extra duty.

## Iron Drums or Containers

The board overruled claims by several importers of iron drums or other metal containers. The containers were assessed at 30 per cent. as unusual coverings, and were claimed dutiable at the same rates as their contents as usual containers. The importers included the Monsanto Chemical Works, J. J. Buchey & Co., Farbenfabriken of Elberfeld Company, George S. Bush & Co., Edwin Horrax, B. F. Goodrich Company, Texas & Pacific Railroad Company, and Theodore B. Starr.

# The Iron and Metal Markets

## Increase in Pig Iron Stocks

### Lower Sheet Bars for the Second Half

### More Standard Oil Buying of Welsh Tin Plates— Heavy Iron Ore Shipments

April pig iron statistics indicate that the greater part of the loss in output due to the floods came in March. Production in the 30 days of April was 2,752,761 tons, or 91,759 tons a day, against 2,763,563 tons in March, or 89,147 tons a day. On May 1 there were 298 furnaces in blast, representing a daily capacity of 92,719 tons, while on April 1 the number was 293, with daily capacity of 89,915 tons.

Several steel works furnaces that have had long campaigns may be forced to go out soon for relining and the unpromising state of the foundry iron market points to rather less than greater merchant iron output in the next two months. Stocks of pig iron in Alabama increased more than 25,000 tons in April, and there were slight increases in some Northern districts, due in part to flood damage to foundries and in a few cases to foundry strikes which held up shipments.

While unfavorable expressions concerning the business outlook have increased, the steel trade shows continued resistance to such sentiment. A canvass has been made of a number of large companies to locate suspension of deliveries or cancellations of orders, but none were reported. What is missed, that was a marked feature last year, is the cumulative effect of large buying for delivery six to nine months ahead. Our Pittsburgh report puts current shipments at 20 to 25 per cent. in excess of incoming business in the form of specifications.

In the Central West much significance has been given to the appearance of quotations for sheet bars for the second half at \$2.50 to \$3 below prices for prompt shipment. It is intimated that sheet mills located near steel works have been offered Bessemer sheet bars at close to \$26.50 delivered. The new open-hearth steel capacity to come in late in the year is plainly figuring as a factor.

Much is made at London of large buying by the Standard Oil Company both for this country and the Far East, the past week's orders being estimated all the way from 100,000 to 250,000 boxes. Welsh prices have advanced 4½d. in consequence. June deliveries were wanted, but home mills could not make them. The question has been raised whether the domestic canning industry can get all the tin plates it will call for in the coming season.

The Santa Fé has just bought 15,000 tons of rails. It is recognized that the bulk of the large business for this year has already gone to the mills. Bridge contracts have been of fair volume. One contract calls for 6000 tons for bridges in the State of Washington and orders have been given by the Big Four for 7100 tons of flood replacement work, of which 4000 tons went to the Pennsylvania Steel Company and 2000 tons to the American Bridge Company. Structural business in sight is put at 240,000 tons.

Reports persist of structural and plate business for early delivery at close to contract prices. Some sizes of structural shapes can be had at 1.50c. Pittsburgh for delivery in 30 days, but plate mills as a rule are getting 1.60c. for such delivery. Bids have been taken by the Mare Island Navy Yard for 6000 tons of plates for two colliers.

The wire trade continues unsatisfactory as to new

contracts, while specifications have not been greatly stimulated by the last advance in price.

In rivets and bolts prices are \$1 to \$2 lower, some manufacturers having become more aggressive.

Lower pig-iron prices are reported from Chicago and the principal markets for Southern iron. It is now evident that \$12, Birmingham, is not the limit of the decline in the latter, though the lower quotations have not brought any large business. In districts in which they meet sharp competition from Southern or Ohio furnaces Chicago sellers have not stopped at \$16 furnace for No. 2 foundry iron.

In Eastern Pennsylvania the principal buying has been in forge iron, one iron rolling mill interest having taken about 10,000 tons at \$15.75 to \$16 delivered. Two Lehigh Valley furnaces have blown out.

A sale of 10,000 tons of basic iron has been made by a Cleveland interest for May and June delivery at close to \$15.50 Valley. A steel company is also reported in the market for a round lot of Bessemer iron. The Westinghouse purchases of foundry iron for the second half may reach 20,000 tons.

The quantity of iron ore on Lake Erie docks May 1 was 5,456,774 tons, as compared with 5,717,801 tons May 1, 1912, or 261,027 tons less. Shipments from Lake Erie docks from December 1, 1912, to May 1, 1913, were 4,597,062 tons, breaking all previous records.

## A Comparison of Prices

### Advances Over the Previous Week in Heavy Type, Declines in Italics

At date, one week, one month, and one year previous.

	May 7, 1913.	Apr. 30, 1913.	Apr. 9, 1913.	May 8, 1912.
<b>Pig Iron, Per Gross Ton:</b>				
Foundry No. 2 X, Philadelphia.	\$17.00	\$17.00	\$17.75	\$15.25
Foundry No. 2, Valley furnace.	15.00	15.00	16.00	13.25
Foundry No. 2 S'th'n, Cin'ti.	15.25	15.25	15.75	14.00
Foundry No. 2, Birmingham, Ala.	12.00	12.00	12.50	10.75
Foundry No. 2, furnace, Chicago*	16.00	16.75	17.25	14.50
Basic, delivered, eastern Pa.	16.50	16.50	17.00	15.25
Basic, Valley furnace	15.50	15.75	16.00	13.00
Bessemer, Pittsburgh	17.90	17.90	17.90	15.15
Malleable Bessemer, Chicago*	16.00	16.75	17.25	14.50
Gray forge, Pittsburgh.	15.40	15.40	16.65	13.75
Lake Superior charcoal, Chicago	18.00	18.00	18.00	15.75

<b>Billets, etc. Per Gross Ton:</b>				
Bessemer billets, Pittsburgh...	28.00	28.50	28.50	20.50
Open-hearth billets, Pittsburgh...	28.50	29.00	29.00	20.00
Forging billets, Pittsburgh...	36.00	36.00	36.00	27.00
Open-hearth billets, Philadelphia	29.00	29.00	30.00	23.40
Wire rods, Pittsburgh	30.00	30.00	30.00	25.00

<b>Old Material, Per Gross Ton:</b>				
Iron rails, Chicago	16.00	16.00	16.25	16.00
Iron rails, Philadelphia	18.00	18.00	18.25	16.50
Carwheels, Chicago	15.25	16.75	16.75	14.00
Carwheels, Philadelphia	14.00	14.25	15.00	13.50
Heavy steel scrap, Pittsburgh	13.75	14.00	14.25	13.25
Heavy steel scrap, Chicago	11.75	12.00	12.50	11.75
Heavy steel scrap, Philadelphia	12.50	12.50	13.50	13.50

<b>Finished Iron and Steel,</b>				
Per Pound to Large Buyers:	Cents.	Cents.	Cents.	Cents.
Bessemer rails, heavy, at mill...	1.25	1.25	1.25	1.25
Iron bars, Philadelphia	1.57½	1.57½	1.67½	1.30
Iron bars, Pittsburgh	1.70	1.70	1.70	1.25
Iron bars, Chicago	1.57½	1.57½	1.57½	1.25
Steel bars, Pittsburgh, future	1.40	1.40	1.40	1.20
Steel bars, Pittsburgh, prompt	1.70	1.80	1.85	1.20
Steel bars, New York, future	1.56	1.56	1.56	1.36
Steel bars, New York, prompt	1.86	1.96	2.01	1.36
Tank plates, Pittsburgh, future	1.45	1.45	1.45	1.25
Tank plates, Pittsburgh, prompt	1.60	1.60	1.70	1.25
Tank plates, New York, future	1.61	1.61	1.61	1.36
Tank plates, New York, prompt	1.76	1.76	1.76	1.36
Beams, Pittsburgh, future	1.45	1.45	1.45	1.25
Beams, Pittsburgh, prompt	1.50	1.60	1.70	1.25
Beams, New York, future	1.61	1.61	1.61	1.36
Beams, New York, prompt	1.66	1.71	1.76	1.36
Angles, Pittsburgh, future	1.45	1.45	1.45	1.25
Angles, Pittsburgh, prompt	1.50	1.60	1.70	1.25
Angles, New York, future	1.61	1.61	1.61	1.36
Angles, New York, prompt	1.66	1.71	1.76	1.36
Skelp, grooved steel, Pittsburgh	1.45	1.45	1.45	1.15
Skelp, sheared steel, Pittsburgh	1.50	1.50	1.50	1.20
Steel hoops, Pittsburgh	1.60	1.60	1.60	1.25

\*The average switching charge for delivery to foundries in the Chicago district is 50c. per ton.

†An error was made last week in dating this column May 1.

Sheets, Nails and Wire, Per Pound to Large Buyers:	May 7, 1913.	Apr. 30, 1913.	Apr. 9, 1913.	May 8, 1912.
	Cents.	Cents.	Cents.	Cents.
Sheet, black, No. 28, Pittsburgh	2.30	2.35	2.35	1.90
Wire nails, Pittsburgh	1.80	1.80	1.80	1.60
Car nails, f.o.b. Eastern mills	1.80	1.80	1.80	...
Car nails, Pittsburgh	1.70	1.70	1.70	1.55
Fence wire, ann'd, 0 to 9, Pgh.	1.60	1.60	1.60	1.40
Galv. wire, galv., Pittsburgh	2.20	2.20	2.20	1.90

Coke, Connellsville, Per Net Ton, at Oven:				
Forward coke, prompt shipment	\$2.15	\$2.00	\$2.00	\$2.35
Forward coke, future delivery	2.25	2.25	2.25	2.25
Foundry coke, prompt shipment	3.00	3.00	3.00	2.65
Foundry coke, future delivery	2.90	3.00	3.00	2.40

Metals, Per Pound to Large Buyers:				
	Cents.	Cents.	Cents.	Cents.
Lake copper, New York	10.00	15.75	15.62½	15.87½
Electrolytic copper, New York	15.62½	15.62½	15.37½	15.75
Spelter, St. Louis	5.40	5.45	5.75	6.65
Spelter, New York	5.55	5.60	5.90	6.80
Lead, St. Louis	4.20	4.37½	4.20	4.05
Lead, New York	4.35	4.50	4.35	4.20
Tin, New York	50.12½	49.87½	48.25	45.87½
Antimony, Hallett, New York	8.12½	8.12½	8.50	7.55
Tin plate, 100-lb. box, Pittsburgh	\$3.60	\$3.60	\$3.60	\$3.30

## Finished Iron and Steel f. o. b. Pittsburgh

Freight rates from Pittsburgh in carloads, per 100 lb.: New York, 16c.; Philadelphia, 15c.; Boston, 18c.; Buffalo, 11c.; Cleveland, 10c.; Cincinnati, 15c.; Indianapolis, 17c.; Chicago, 18c.; St. Louis, 22½c.; Kansas City, 42½c.; Omaha, 42½c.; St. Paul, 32c.; Denver, 84½c.; New Orleans, 30c.; Birmingham, Ala., 45c.; Pacific coast, 80c. on plates, structural shapes and sheets No. 11 and heavier; 85c. on sheets Nos. 12 to 16; 95c. on sheets No. 16 and lighter; 65c. on wrought pipe and boiler tubes.

Plates.—Tank plates, ¼ in. thick, 6¼ in. up to 100 in. wide, 1.45c. to 1.60c., base, net cash, 30 days. Following are stipulations prescribed by manufacturers, with extras:

Rectangular plates, tank steel or conforming to manufacturers' standard specifications for structural steel dated February 6, 1903, or equivalent, ¼ in. and over on thinnest edge, 100 in. wide and under, down to but not including 6 in. wide, are base.

Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per sq. ft., are considered ¼-in. plates. Plates over 72 in. wide must be ordered ¼ in. thick on edge, or not less than 11 lb. per sq. ft., to take base price. Plates over 72 in. wide ordered less than 11 lb. per sq. ft., down to the weight of 3-16 in., take the price of 3-16 in.

Allowable overweight, whether plates are ordered to gauge or weight, to be governed by the standard specifications of the Association of American Steel Manufacturers.

Extras.	Cents per lb.
Gauges under ¼ in. to and including 3-16 in.	.10
Gauges under 3-16 in. to and including No. 2	.15
Gauges under No. 8 to and including No. 9	.25
Gauges under No. 9 to and including No. 10	.30
Gauges under No. 10 to and including No. 12	.40
Sketches (including straight taper plates) 3 ft. and over	.10
Complete circles, 3 ft. in diameter and over	.20
Boiler and flange steel	.10
"A. B. M. A." and ordinary firebox steel	.20
Still bottom steel	.30
Marine steel	.40
Locomotive firebox steel	.50
Widths over 100 in. up to 110 in., inclusive	.05
Widths over 110 in. up to 115 in., inclusive	.10
Widths over 115 in. up to 120 in., inclusive	.15
Widths over 120 in. up to 125 in., inclusive	.25
Widths over 125 in. up to 130 in., inclusive	.50
Widths over 130 in.	1.00
Cutting to lengths, under 3 ft., to 2 ft. inclusive	.25
Cutting to lengths, under 2 ft., to 1 ft. inclusive	.50
Cutting to lengths, under 1 ft.	1.55
No charge for cutting rectangular plates to lengths 3 ft. and over.	

Structural Material.—I-beams, 3 to 15 in.; channels, 3 to 15 in.; angles, 3 to 6 in. on one or both legs, ¼ in. thick and over, and zees, 3 in. and over, 1.45c. to 1.60c. Extras on other shapes and sizes are as follows:

	Cents per lb.
I-beams over 15 in.	.10
H-beams over 18 in.	.10
Angles over 6 in. on one or both legs	.10
Angles, 3 in. on one or both legs, less than ¼ in. thick, as per steel bar card, Sept. 1, 1909	.70
Tees, structural sizes (except elevator, hand rail, car-truck and conductor rail)	.05
Angles, channels and tees, under 3 in. wide as per steel bar card, Sept. 1, 1909	.20 to .80
Deck beams and bulb angles	.30
Hand rail tees	.75
Cutting to lengths, under 3 ft., to 2 ft. inclusive	.25
Cutting to lengths, under 2 ft., to 1 ft. inclusive	.50
Cutting to lengths, under 1 ft.	1.55
No charge for cutting to lengths 3 ft. and over.	

Wire Rods and Wire.—Bessemer, open-hearth and chain rods, \$30. Fence wire, Nos. 0 to 9, per 100 lb., terms 60 days or 2 per cent. discount in 10 days, carload lots to jobbers, annealed, \$1.60; galvanized, \$2. Galvanized barb wire, to jobbers, \$2.20; painted, \$1.80. Wire nails, to jobbers, \$1.80.

The following table gives the price to retail merchants on fence wire in less than carloads, with the extras added to the base price:

Plain Wire, per 100 lb.									
Nos.	0 to 9	10	11	12 & 13½	13	14	15	16	
Annealed	\$1.75	\$1.80	\$1.85	\$1.90	\$2.00	\$2.10	\$2.20	\$2.30	
Galvanized	2.15	2.20	2.25	2.30	2.40	2.50	2.90	3.00	

Wrought Pipe.—The following are the jobbers' carload discounts on the Pittsburgh basing card on steel pipe (full weight) in effect from April 12, 1913, iron pipe (full weight), from October 21, 1912:

Butt Weld.				
Steel.			Iron.	
Inches.	Black.	Galv.	Inches.	Black.
¾, 1 and 1½	72½	52	¾ and 1	67
1½	76½	66	1	66
¾ to 3	79½	71	1½	70
			¾ to 2½	73

Lap Weld.				
2	76½	68	1½	57
2½ to 6	78½	70	1½	68
7 to 12	75½	65	2	69
13 to 15	52½	..	2½ to 4	71
			4½ to 6	71
			7 to 12	69

Plugged and Reamed.				
1 to 3, butt	77½	69	1 to 1½, butt	71
2, lap	74½	66	2, butt	72
2½ to 4, lap	76½	68	1½, lap	55
			1½, lap	66
			2, lap	67
			2½ to 4, lap	69

Butt Weld, extra strong, plain ends.				
¾, 1 and 1½	67½	57	¾	64
1½	72½	66	1½	68
¾ to 1½	76½	70	1½ to 1½	72
2 to 3	77½	71	2 and 2½	73

Lap Weld, extra strong, plain ends.				
2	73½	65	1½	66
2½ to 4	75½	67	2	67
4½ to 6	74½	66	2½ to 4	71
7 to 8	67½	57	4½ to 6	70
9 to 12	62½	52	7 and 8	64
			9 to 12	59

Butt Weld, double extra strong, plain ends.				
¾	62½	56	1½	58
¾ to 1½	65½	59	¾ to 1½	61
2 to 2½	67½	61	2 and 2½	63

Lap Weld, double extra strong, plain ends.				
2	63½	57	2	56
2½ to 4	65½	59	2½ to 4	61
4½ to 6	64½	58	4½ to 6	60
7 to 8	57½	47	7 to 8	53

The above discounts are subject to the usual variation in weight of 5 per cent. Prices for less than carloads are two (2) points lower basing (higher price) than the above discounts on black and three (3) points on galvanized.

Boiler Tubes.—Discounts to jobbers, in carloads on lap-welded steel, in effect from February 1, 1913, and standard charcoal-iron boiler tubes, in effect from January 1, 1913, are as follows:

Lap-Welded Steel.		Standard Charcoal Iron.	
1½ and 2 in.	60	1½ in.	44
2½ in.	57	1½ and 2 in.	48
2½ and 3½ in.	63	2½ in.	44
3 and 3½ in.	68	2½ and 3½ in.	53
3½ and 4½ in.	70	3 and 3½ in.	55
5 and 6 in.	63	3½ to 4½ in.	58
7 to 13 in.	60	Locomotive and steamship special grades bring higher prices.	

2½ in. and smaller, over 18 ft., 10 per cent. net extra.  
2½ in. and larger, over 22 ft., 10 per cent. net extra.  
Less than carloads will be sold at the delivered discounts for carloads, lowered by two points for lengths 22 ft. and under to destinations east of the Mississippi River; lengths over 22 ft. and all shipments going west of the Mississippi River must be sold f.o.b. mill at Pittsburgh basing discount, lowered by two points.

Sheets.—Makers' prices for mill shipments on sheets of U. S. Standard gauge, in carload and larger lots, on which jobbers charge the usual advance for small lots from store, are as follows, f.o.b. Pittsburgh, terms 30 days net or 2 per cent. cash discount in 10 days from date of invoice:

Blue Annealed Sheets		Cents per lb.
Nos. 3 to 8		1.70
Nos. 9 and 10		1.75
Nos. 11 and 12		1.80
Nos. 13 and 14		1.85
Nos. 15 and 16		1.95

Box Annealed Sheets, Cold Rolled		
Nos. 10 and 11		1.95 to 2.00
No. 12		1.95 to 2.00
Nos. 13 and 14		2.00 to 2.05
Nos. 15 and 16		2.05 to 2.10
Nos. 17 to 21		2.10 to 2.15
Nos. 22 and 24		2.15 to 2.20
Nos. 25 and 26		2.20 to 2.25
No. 27		2.25 to 2.30
No. 28		2.30 to 2.35
No. 29		2.35 to 2.40
No. 30		2.45 to 2.50



## Galvanized Sheets of Black Sheet Gauge

	Cents per lb.
Nos. 10 and 11 .....	2.40 to 2.50
No. 12 .....	2.50 to 2.60
Nos. 13 and 14 .....	2.50 to 2.60
Nos. 15 and 16 .....	2.65 to 2.75
Nos. 17 to 21 .....	2.80 to 2.90
Nos. 22 and 24 .....	2.95 to 3.05
Nos. 25 and 26 .....	3.10 to 3.20
No. 27 .....	3.25 to 3.35
No. 28 .....	3.40 to 3.50
No. 29 .....	3.55 to 3.65
No. 30 .....	3.70 to 3.80

## Pittsburgh

PITTSBURGH, PA., May 6, 1913.

Much that has been said in the daily press and elsewhere about unfavorable conditions in the steel trade is exaggerated. It is true that new buying has quieted down and there has been a falling off in specifications so that for the first time in more than a year shipments by the mills are 20 to 25 per cent. in excess of incoming business. It must be borne in mind, however, that practically every steel plant in the country has its product sold up for three or four months and actual orders on its books for 60 days or more. If there was a complete shutting off of new business the mills would still be able to run full to July or longer. By that time the crop situation will be pretty well known, and if this proves to be another good crop year a buying movement can then be looked for. It is known that a very large tonnage is being held up awaiting developments. As the mills are making better deliveries on contracts steel makers that have been selling their products at premiums for prompt deliveries are finding their market more and more restricted. The situation in the past week has shown no marked change, prices being fairly steady, but not enough new business has been coming out to test the market. Pig iron is unusually dull, and so is semi-finished steel. The scrap trade is dragging and prices are again from 25c. to 50c. a ton lower.

**Pig Iron.**—Average prices for April on Bessemer iron, compiled by W. P. Snyder & Co. are \$17 and on basic \$15.71 at Valley furnace. The Westinghouse Electric & Mfg. Company is in the market for its entire last-half requirements, probably 20,000 tons of foundry iron, and this inquiry is likely to bring out some low prices. While Bessemer iron is nominally held at \$17 it was offered recently as low as \$16.50 at Valley furnace to a large consumer, who turned it down, not being in need of it. A leading steel company outside the Pittsburgh district has bought 10,000 tons of basic iron for May and June shipment from a Cleveland furnace interest at a price not above \$15.50 at Valley furnace. The American Steel Foundries is in the market for 10,000 tons of basic for May and June delivery for its Sharon and Alliance works. Another large steel interest is figuring on the purchase of a round lot of Bessemer. We quote as follows: Standard Bessemer, \$17; malleable, \$15; basic, \$15.50; gray forge, \$14.50, and No. 2 foundry, \$15, all at Valley furnace, with a freight rate of 90c. a ton for delivery in the Pittsburgh district.

**Billets and Sheet Bars.**—The local steel market has been exercised over unverified reports of a sale of 10,000 tons of sheet bars for prompt delivery at \$26.50, maker's mill, stated to have been made prior to the flood and for April delivery. Against this is the fact that the Carnegie Steel Company in the last 10 days has offered considerably above \$26.50 at maker's mill for sheet bars, but failed to find any at that price. An official of one of the large steel companies, who has made a thorough investigation, reports that he was unable to find any producer that would sell sheet bars at less than \$29 for Bessemer and about \$30 for open hearth for prompt delivery. The steel mills are now making better deliveries on contracts and this is causing premiums for prompt shipment to disappear, which is likely the reason for the reports that there has been a serious decline in steel prices. As a result of the investigation referred to we quote for prompt delivery as follows: Bessemer billets, \$28; Bessemer sheet bars, \$29; open-hearth billets, \$28.50 to \$29; open-hearth sheet bars, \$29.50 to \$30, maker's mill, Pittsburgh or Youngstown. Forging billets are still firm at \$36 to \$37, and axle billets at \$34 to \$35, Pittsburgh. No prices have been established for third-quarter delivery by any of the steel companies, and quotations for such delivery are based entirely on the sales of sheet bars made some time ago by a Youngstown interest on the basis of about \$27.50 at mill. It is probable that both billets and sheet bars for third-quarter shipment could be bought at \$1 to \$2 a ton less than for prompt delivery.

**Ferroalloys.**—There is little new inquiry, and prices

are only fairly strong. English 80 per cent. ferromanganese for prompt or forward delivery is held nominally at \$61, Baltimore, the rate to Pittsburgh being \$2 a ton. Consumers of ferrosilicon are well supplied for some time ahead and new inquiry is light. Sales are confined to an occasional carload for prompt delivery which brings full prices. We quote 50 per cent. ferrosilicon, in lots up to 100 tons, at \$75; over 100 tons to 600 tons, \$74; over 600 tons, \$73, Pittsburgh. We quote 10 per cent. at \$24; 11 per cent., \$25; 12 per cent., \$26, f.o.b. cars at furnace, Jackson, Ohio, or Ashland, Ky. We quote ferro-carbon-titanium at 8c. per lb. in carloads; 10c. in 2000-lb. lots and over; 12½c. in lots up to 2000 lb.

**Wire Rods.**—In sympathy with conditions in wire products, the new demand for wire rods is dull and specifications against contracts are not coming in so freely. We continue to quote Bessemer, open-hearth and chain rods at \$30 Pittsburgh, but it is likely that this price could be shaded.

**Muck Bar.**—No recent sales have been made in this market and there is no new inquiry. We quote best grades of local muck bar made from all pig iron at \$30, Pittsburgh. Eastern muck bar of standard grades, made from all pig iron, is being offered at about \$28 delivered, Pittsburgh.

**Skelp.**—The skelp mills are well filled up to July or longer but no recent sales are reported. We quote: Grooved skelp, 1.45c. to 1.50c.; sheared steel skelp, 1.50c. to 1.55c.; grooved iron skelp, 1.75c. to 1.80c.; sheared iron skelp, 1.85c. to 1.90c., delivered at buyers' mills in the Pittsburgh district.

**Steel Rails.**—Inquiry for standard sections is reported active and a good deal of business is expected to be placed in the near future for delivery in last half. Many small orders are being placed which aggregate considerable tonnage. The Seaboard Air Line recently placed a contract for 83,000 pairs of splice bars of which slightly more than half was taken by the local interest, the remainder going to Eastern mills. The demand for light rails is active from the coal mining interests and also for replacements, but new business this year in light rails from the traction companies has been much lighter than anticipated. We quote splice bars at 1.50c. per lb. and standard section rails at 1.25c. per lb. Light rails are quoted as follows: 25, 30, 35, 40 and 45-lb. sections, 1.25c.; 16 and 20 lb., 1.30c.; 12 and 14 lb., 1.35c., and 8 and 10 lb., 1.40c., all in carload lots, f.o.b. Pittsburgh.

**Structural Material.**—A good deal of work is being held up for various reasons, most of which is expected to come out later. The Jones & Laughlin Steel Company has taken a contract for 1400 tons of caisson plates for piers for Panama Canal docks, making a total of over 8000 tons placed with this company, which has also taken the material for the Hammett hospital at Erie, Pa., about 300 tons. The American Bridge Company has taken about 2000 tons of material for bridge work for the Big Four Railroad to replace structures destroyed by the floods. There is considerable complaint of low prices being made, which, in view of the filled up condition of the fabricating concerns, are said to be unwarranted. The Fort Pitt Bridge Works of this city has been awarded the material for pier work for the Grand Central Terminal in New York City, about 600 tons. We quote beams and channels up to 15 in. at 1.45c. to 1.50c. for delivery at convenience of the mill, which would be second half of this year, while small lots from warehouse for prompt delivery are bringing from 1.60c. up, depending on the size of the order and the deliveries wanted.

**Plates.**—Active inquiries total 10,000 to 12,000 cars. The Baltimore & Ohio Railroad has placed 500 steel hoppers with the Cambria Steel Company and the Havana Central Railroad 50 gondola cars with the Pressed Steel Car Company. The Illinois Central has placed 43 passenger cars with the Pullman Company. The Erie Railroad has inquiries out for 3000 steel underframe box cars, 1500 hopper coal cars and 1500 cars of special type. The Wabash Railroad is in the market for 1000 steel underframe box cars. We quote ¼ in. and heavier tank plates at 1.45c., Pittsburgh, for forward delivery, while for shipment in three or four weeks 1.50c. to 1.60c. is being named for carloads and larger lots, f.o.b. Pittsburgh.

**Iron and Steel Bars.**—Implement makers continue to contract for their requirements of steel bars for delivery over the last half and in some cases these orders run for shipment up to July 1 next year. The new demand for steel bars has quieted down and specifications have also fallen off to some extent. However, the makers of steel bars have actual orders on their

books taking their entire output over the next two or three months and have contracts running up to October, provided the material is taken out. The new demand for iron bars is smaller, but the mills are well filled for the next 60 to 90 days. We quote merchant steel bars at 1.40c. to 1.45c. for delivery at convenience of the mill, which would not be before third quarter, while for shipment from warehouses 1.90c. to 2c. is quoted. We quote iron bars at 1.70c. to 1.75c. for reasonably prompt delivery. Mills charge \$1 extra per ton for twisting 3/4-in. and larger steel bars and \$2 extra for 1/2 to 3/8 in.

**Sheets.**—The shading in prices on black and galvanized sheets continues, but so far does not exceed about \$1 a ton on black sheets and \$2 on galvanized. Prices on blue annealed sheets are firm. As showing that there is still a good deal of strength in the sheet market, we note that a local mill has just booked an order for 1000 tons of No. 28 galvanized sheets at 3.50c. for third quarter. Specifications are coming in at a good rate but are not so heavy as sometime ago, while the new demand is only fairly active. The American Sheet & Tin Plate Company is operating this week 79 per cent. of its hot sheet mill capacity, and continues to report that it is short of steel. Other leading sheet mills are operating practically 100 per cent. and state they have enough orders on their books to take their output for the next two or three months. One leading mill states that on black sheets it is not promising deliveries inside of 12 weeks and on galvanized 14 weeks. We quote No. 10 blue annealed sheets at 1.75c.; No. 28 Bessemer black sheets 2.30c. to 2.35c.; No. 28 galvanized at 3.40c. to 3.50c. and No. 28 tin mill black plate at 2.30c. These prices are f.o.b. Pittsburgh, in carload and larger lots, jobbers charging the usual advances for small lots from store.

**Tin Plate.**—Leading makers report that specifications against contracts were not so active in April and so far this month as they were in the first quarter. Consumers anticipated their requirements for practically the entire year in the first quarter. The American Sheet & Tin Plate Company is running this week 89 per cent. of its hot tin mill capacity. Little new business is being placed in tin plate, but it is claimed that prices are firmly held. We quote 100 lb. cokes at \$3.60; 100 lb. ternes at \$3.45 and No. 28 black plate at \$2.30 all f.o.b. Pittsburgh.

**Hoops and Bands.**—New buying is light but specifications against contracts are coming in freely. Some heavy contracts for hoops have recently been placed for delivery over the last half and it is said that all were taken at the full price. We quote bands at 1.40c., with extras as per the steel bar card, and hoops at 1.60c. f.o.b. Pittsburgh.

**Rivets and Bolts.**—Prices on both rivets and bolts are being shaded \$1 to \$2 a ton. The new demand has quieted down and some makers are going more aggressively for business. The market on bolts is on the basis of 5 per cent. less than regular discounts. Button-head structural rivets are about \$2.10 and cone head boiler rivets about \$2.20. Regular discounts on bolts are as follows, in lots of 300 lb. or over delivered within a 20c. freight radius of maker's works:

Coach and lag screws .....	.80 and 10% off
Small carriage bolts, cut threads .....	.75 and 5% off
Small carriage bolts, rolled threads .....	.75 and 10% off
Large carriage bolts .....	.70% off
Small machine bolts, cut threads .....	.75 and 10% off
Small machine bolts, rolled threads .....	.75, 10 and 5% off
Large machine bolts .....	.70 and 7% off
Machine bolts with C.P.C. and T nuts, small .....	.75 and 5% off
Machine bolts with C.P.C. and T nuts, large .....	.70% off
Square hot pressed nuts, blanked and tapped .....	\$.57 off list
Hexagon nuts .....	\$.63 off list
C.P.C. and R. square nuts, tapped and blank .....	\$.57 off list
Hexagon nuts, 3/4 and larger .....	\$.66 off list
Hexagon nuts smaller than 3/4 .....	\$.72 off list
C.P. plain square nuts .....	\$.52 off list
C.P. plain hexagon nuts .....	\$.55 off list
Semi-finished hexagon nuts 3/4 and larger .....	.85% off
Semi-finished hex. nuts smaller than 3/4 .....	.85 and 10% off
Rivets, 7/16 x 6 1/2, smaller and shorter .....	.75, 10 and 10% off
Rivets, metallic tinned, bulk .....	3 1/2c. per lb. net extra
Rivets, tin plated, bulk .....	1 1/2c. per lb. net extra
Rivets, metallic tinned, packages .....	.70, 10 and 10% off

**Wire Products.**—Conditions in this branch of trade are unsatisfactory, the new demand being light and specifications against contracts coming in only fairly well. Little new business has been placed since the advance of \$1 a ton more than a month ago, and it has not been strictly held. Regular prices to jobbers in carload and larger lots are as follows: Wire nails, \$1.80, base, per keg; cut nails, \$1.70 to \$1.75; galvanized barb wire, \$2.20 per 100 lb.; painted, \$1.80; annealed fence wire, \$1.60, and galvanized fence wire, \$2, f.o.b. Pittsburgh, usual terms, freight added to point of

delivery. Jobbers charge the usual advances over these prices for small lots from store.

**Railroad Spikes.**—The new demand is quiet and specifications have shown a decided falling off. Indications are that there will be a large amount of new track laying in the second half and spike makers confidently expect a better demand. We quote railroad spikes in base sizes, 5 1/2 x 9/16 in., at \$1.80 to \$1.85, and small railroad and boat spikes in carload lots at \$1.90 to \$1.95 per 100 lb., f.o.b. Pittsburgh.

**Shafting.**—Makers of shafting and automobile builders are getting closer together in the matter of contracts for last half. It is said that a few have already been placed. Specifications against contracts have not been so active in the past month or more. We quote cold-rolled shafting at 58 per cent. off in carload lots, and 53 per cent. in small lots delivered in base territory, the usual slight differential over these discounts being allowed to the very largest consumers.

**Merchant Steel.**—In sympathy with other lines of finished products, the new demand has quieted down and specifications have also fallen off. Shipments by the mills are now in excess of specifications, but they have work on their books for the next two or three months. We quote: Iron finished tire, 1 1/2 x 1/2 in. and larger, \$1.40c. to 1.55c., base; under 1 1/2 x 1/2 in., 1.55c. to 1.65c.; planished tire, 1.60c. to 1.70c.; channel tire, 3/4 to 7/8 and 1 in., 1.90c. to 2c.; 1 1/8 in. and larger, 1.80c. to 1.90c.; toe calk, 2c. to 2.10c., base; flat sleigh shoe, 1.50c. to 1.65c.; concave and convex, 1.80c. to 1.90c.; cutter shoe, tapered or bent, 2.30c. to 2.40c.; spring steel, 2c. to 2.10c.; machinery steel, smooth finish, 1.80c. to 1.85c. We quote cold-rolled strip steel as follows: Base rates for 1 in. and 1 1/2 in. and wider, under 0.20 carbon, and No. 10 and heavier, hard temper, 3.30c.; soft, 3.55c.; coils, hard, 3.20c.; soft, 3.45c.; freight allowed. The usual differentials apply for lighter gauges and sizes.

**Old Material.**—The local scrap trade shows no improvement in demand, and owing to heavy offerings prices have gone off further. Most of the local consumers are out of the market and are not interested in quotations made by dealers. The heavy replacement by railroads in the past year is responsible to some extent for the present demoralization in the scrap trade. Offerings by railroads have not only been heavy for some months but are likely to get still heavier. A Western dealer recently bought 3000 old freight and coal cars from the Wheeling & Lake Erie Railroad to wreck them and sell the material on the open market. The scrap list of the Pennsylvania Railroad closed May 6 and the Baltimore & Ohio May 7. Both were heavy, and prices bid by dealers were lower than for a long time, while some did not bid. A great deal of scrap is pressing the market to find sale, and while this continues values will likely go still lower. One local consumer that was a rather frequent buyer of heavy steel scrap recently at \$14.25 to \$14.50 has refused in the past week to take it in at \$14. Dealers have again reduced prices on nearly all grades from 25 to 50c. per ton and are now quoting as follows, per gross ton, for delivery in the Pittsburgh and nearby districts:

Heavy steel scrap, Steubenville, Follansbee, Brackenridge, Sharon, Monessen and Pittsburgh delivery .....	\$13.75 to \$14.00
No. 1 foundry cast .....	13.75 to 14.00
No. 2 foundry cast .....	12.75 to 13.00
Bundled sheet scrap, f.o.b. consumers' mills, Pittsburgh district .....	9.75 to 10.00
Rerolling rails, Newark and Cambridge, Ohio, Cumberland, Md., and Franklin, Pa. ....	15.00 to 15.25
No. 1 railroad malleable stock .....	12.75 to 13.00
Grate bars .....	10.00 to 10.25
Low phosphorus melting stock .....	16.00 to 16.25
Iron car axles .....	25.50 to 26.00
Steel car axles .....	19.00 to 19.50
Locomotive axles, steel .....	23.00 to 24.00
Locomotive axles, iron .....	27.00 to 27.25
No. 1 busheling scrap .....	13.00 to 13.25
No. 2 busheling scrap .....	9.00 to 9.25
Old carwheels .....	14.50 to 14.75
*Machine shop turnings .....	8.25 to 8.50
*Cast-iron borings .....	9.75 to 10.00
†Sheet bar crop ends .....	16.00 to 16.25
Old iron rails .....	15.50 to 15.75
No. 1 railroad wrought scrap .....	14.25 to 14.50
Heavy steel axle turnings .....	10.50 to 10.75
Stove plate .....	9.50 to 9.75

\*These prices are f.o.b. cars at consumers' mills in the Pittsburgh district.

†Shipping point.

**Merchant Pipe.**—There is a good steady demand for merchant pipe in the current run of business which aggregates considerable tonnage. The National Tube Company has taken a contract for 30 miles of 16-in. steel pipe for a Texas gas line. All the mills are said to be running to practically full capacity, but there is



some unevenness in discounts on steel pipe, mainly by one or two mills that have been rather aggressively seeking business for some time.

**Boiler Tubes.**—Several heavy contracts for locomotive tubes have recently been taken by a local interest, which reports that it is sold up for the next four months and on seamless tubing practically over the entire year. New demand for merchant tubes is only fair, but the mills have enough work on their books to take their output for the next two or three months. Discounts on merchant and locomotive tubes are reported firm.

**Coke.**—The market continues quiet. Standard grades of furnace coke for prompt shipment have sold recently at \$2.15 and we note a sale of about 3000 tons at that price. On an inquiry for 5000 tons for prompt shipment, one leading maker has quoted \$2.20, and expects to secure the order this week. We quote standard makes of furnace coke for prompt shipment at \$2.10 to \$2.20 per net ton at oven, and 72-hour foundry coke at \$2.90 to \$3.10. So far no contracts for furnace coke have been closed for last-half delivery.

## Chicago

CHICAGO, ILL., May 7, 1913.—(By Telegraph.)

The few sales of foundry and malleable pig iron in this territory the past week have sufficed only to show a rather unexpected weakness in furnace prices and to increase rather than disturb the conviction of the larger buyers that further weakness is inevitable. Local furnaces have not stopped at \$16 f.o.b. their furnaces, in taking business in lots considerably less than 1000 tons, where the competition made a low price necessary to secure the order. While there have not been enough sales to clearly outline the furnace position, quotations made indicate that, for delivery at those points where Ohio or Southern iron has an advantage, some of the local producers propose to secure the tonnage even at the necessary sacrifice in price; at the same time they are saving whatever advantage accrues to them in the more favorable locations. Delivered prices outside of Chicago are therefore approximately the same as those in Chicago where the freight is much less. In like manner, the delivered price of charcoal iron has been made with less regard for differences in freight, and \$18 has been done. There has not been enough tonnage offered to Southern furnaces to test the real strength of the \$12 price which is now the generally accepted basis for No. 2 at Birmingham. The following quotations are for iron delivered at consumers' yards, except those for Northern foundry, malleable Bessemer and basic iron, which are f.o.b. furnace and do not include a local switching charge averaging 50c. a ton:

Lake Superior charcoal, Nos. 1, 2, 3, 4....	\$18.00 to \$18.50
Northern coke foundry, No. 1.....	16.75 to 17.25
Northern coke foundry, No. 2.....	16.00 to 16.75
Northern coke foundry, No. 3.....	15.50 to 16.00
Southern coke, No. 1 foundry and No. 1 soft	16.85 to 17.35
Southern coke, No. 2 foundry and No. 2 soft	16.35 to 16.85
Southern coke, No. 3.....	15.85 to 16.35
Southern coke, No. 4.....	15.85 to 16.35
Southern gray forge.....	15.85 to 16.35
Southern mottled.....	15.85
Malleable Bessemer.....	16.00 to 16.50
Standard Bessemer.....	19.40 to 19.90
Basic.....	16.00 to 16.50
Jackson Co. and Kentucky silvery, 6 per cent.....	20.40
Jackson Co. and Kentucky silvery, 8 per cent.....	21.40
Jackson Co. and Kentucky silvery, 10 per cent.....	22.40

(By Mail)

With the exception of a well sustained activity in trade from warehouse and a continuance of both specifying and contracting in steel bars from mill, the local market has assumed a neutral aspect which past experience indicates is likely to continue without change until after the turn of the mid-year. The contracting for bars by the implement interests is being so dragged out that even the important aggregate of this tonnage is hardly assuming the form of a buying period. Ohio pig iron has been offered here in competition that necessitated the making of a price lower than \$14.50. Iron-ton. The exceptional weakness in scrap grows more pronounced as the available supply steadily increases.

**Rails and Track Supplies.**—The railroads have entered upon the season of actual track laying, and with the exception of miscellaneous orders for track bolts and spikes are practically out of the market. We quote standard railroad spikes at 1.90c. to 2c., base; track bolts with square nuts, 2.30c. to 2.40c., base, all in carload lots; Chicago; tie plates, \$33 to \$35 net ton; standard section Bessemer rails, Chicago, 1.25c., base; open-hearth, 1.34c.; light rails, 25 to 45 lb., 1.25c.; 16 to 20 lb.,

1.30c.; 12 lb., 1.35c.; 8 lb., 1.40c.; angle bars, 1.50c., Chicago.

**Structural Materials.**—The mill situation as regards structural shapes offers nothing new outside of the now noticeable improvement in deliveries. Additional business is promised in the inquiries for cars from the Missouri Pacific asking for prices on 1000 stock cars and the Wabash on 1000 box cars. The Southern Railway is in the market for 1800 cars, while the Harriman Lines and the Northern Pacific have ordered considerable miscellaneous passenger equipment. The total orders of the Grand Trunk now total 8000 cars, of which all but 2000 were placed in this country. Contracts for fabricated steel include 1883 tons for an extension to the plant of the Colorado Fuel & Iron Company at Pueblo, awarded to the Ritter-Conley Mfg. Company; 1000 tons for the Aaronson Building at San Francisco to be furnished by the Ralston Iron Works; 225 tons for the Chicago, Burlington & Quincy and 175 tons for the Missouri, Kansas & Texas, taken by the American Bridge Company. The Virginia Bridge & Iron Company will furnish 217 tons for the Texas & Pacific, and the Pacific Gas & Electric Company has let 180 tons of steel for transmission towers to a San Francisco fabricator. For mill shipment, Chicago delivery, we continue to quote 1.63c. to 1.68c.

The demand for structural shapes from store continues active, particularly in the lighter shapes. For delivery from warehouse we quote plain shapes base sizes, 2.05c.

**Plates.**—Less of interest is developing in connection with the going business in plates than with any other of the finished steel products, and correspondingly such improvements as the mills are able to show in their delivery quotations are most pronounced with respect to plates. Plates in three or four weeks without premium are now obtainable without difficulty, but new tonnages emanating from this territory are insignificant. We quote for Chicago delivery, mill shipment, 1.63c. to 1.68c.

Local users of plates in less than carload lots are apparently finding it possible to supply their miscellaneous requirements from other sources than jobbers' stocks, for in this department store trade is comparatively quiet. We quote for delivery from store, 2.05c.

**Sheets.**—Sheet conditions continue with little variation from the status that has prevailed for several weeks. A moderately active inquiry for carload and smaller lots, which are generally placed with promptness, is reported, but the repetitions of concessions on galvanized and less frequently on black sheets shows the volume to be still limited enough to provoke active competition on the part of the mills. Wherever the low price takes the business, mills can be found to take the order at prices \$2 below the schedule of the largest interest on galvanized and at \$1 a ton off on black. We continue to quote for Chicago delivery in carloads from mill: No. 28 black sheets, 2.53c.; No. 28 galvanized, 3.58c. to 3.68c.; No. 10 blue annealed, 1.93c.

Following the months of February and March, during which the sheet tonnage out of store was somewhat lighter than the average for the past several months, April business showed substantial gains and the improvement appeared to be general rather than traceable to any particular source of demand. Prices out of store continue without change as follows: No. 10 blue annealed, 2.25c.; No. 28 black, 2.90c.; No. 28 galvanized, 4.15c.

**Bars.**—In contrast with previous seasons of contracting for implement bars, when the bulk of the tonnage has been placed during a comparatively brief interval, contracts are in a manner straggling in, each week witnessing the placing of a few while some of the largest buyers are still uncovered. With practically no likelihood of higher prices, and the mill situation easing up rather than otherwise, the implement interests are disposed to measure up their own prospects until as late a date as possible before providing for their programme of manufacture. Specifications continue in exceptionally good volume as compared with other forms of finished steel. The demand for bar iron has fallen off, but the mills are still comfortably satisfied with their situation and prices are holding with apparent firmness. We quote for mill shipment as follows: Bar iron, 1.57½c. to 1.62½c.; soft steel bars, 1.58c. to 1.65c.; hard steel bars, 1.60c. to 1.70c.; shafting in carloads, 58 per cent. off; less than carloads, 53 per cent. off.

The call for bars out of store, the volume of which has increased rather than otherwise, is based in a large proportion of instances upon inability to obtain bars from mill. Where bars are to be used for building purposes, the failure of the mills to meet delivery schedules provokes an immediate expense which so quickly outweighs the added cost of bars from store that little time is lost in securing the necessary material from warehouse. Shafting prices out of store have been maintained with but little success. For delivery from store, we quote soft steel bars, 1.95c.; bar iron, 1.95c.; reinforcing bars, 1.95c. base with 5c. extra for twisting in sizes ¾ in. and over, and usual card extras for smaller sizes; shafting 53 per cent. off.



**Wire Products.**—The extent to which jobbers built up their stocks of wire goods during the fall, anticipating the subsequent advance in price, still militates against a heavy movement from mill. With the maturity of the spring season of retail buying, it is anticipated that this congestion will soon be reduced. Of the manufactured products, wire nails and fencing are most active. We quote as follows to jobbers: Plain wire, No. 9 and coarser, base, \$1.78; wire nails, \$1.98; painted barb wire, \$1.98; galvanized, \$2.38; polished staples, \$1.08; galvanized, \$2.33, all Chicago.

**Rivets and Bolts.**—Business being placed in this market indicates that the ruling price for rivets does not greatly exceed 1.90c., Pittsburgh, with no great tonnage offering. Bolt makers are growing more keen for business, and irregularities in quotations are reported as more common. We quote from mill as follows: Carriage bolts up to  $\frac{3}{8}$  x 6 in., rolled thread, 75-10; cut thread, 75-5; larger sizes, 70-2½; machine bolts up to  $\frac{3}{8}$  x 4 in., rolled thread, 70-10-5; cut thread, 75-10; large size, 70-7½; coach screws, 80-10 hot pressed nuts, square head, \$5.70 off per cwt.; hexagon, \$6.30 off per cwt. Structural rivets,  $\frac{3}{4}$  to 1½ in., 2.38c., base, Chicago, in carload lots; boiler rivets, 0.10c. additional.

Out of store we quote for structural rivets, 2.70c., and for boiler rivets, 2.90c. Machine bolts up to  $\frac{3}{8}$  x 4 in., 70-7½; larger sizes, 65-5; carriage bolts up to  $\frac{3}{8}$  x 6 in., 70-5; larger sizes, 65 off. Hot pressed nuts, square head, \$5.30, and hexagon, \$5.90 off per cwt.

**Old Material.**—The discouraging contrast between the plentiful supply of scrap in this market and the limited demand was greatly accentuated the past week. Railroad offerings within the limits of this territory easily totaled 40,000 tons definitely listed, with the prospect that their actual holdings exceeded this tonnage by a considerable margin. The Wabash offered 3050 tons; the Chicago, Milwaukee & St. Paul, 1600 tons; the Chicago Great Western 1000 tons; the St. Louis & San Francisco, 500 tons; the Kansas City Southern, 200 tons; the Baltimore & Ohio, about 12,000 tons, while the Pennsylvania Lines West and the Lake Shore & Michigan Southern have their usual quota to sell. The International Harvester Company is offering the accumulations of three or four months at the rate of approximately 1700 tons a month. In the face of this, buying has been almost nil. Added to its steady selling, the Atchison, Topeka & Santa Fe has put out another list which totals well over 10,000 tons and represents but a small part of its accumulations. Prices are still lower, and we have revised our quotations on nearly all grades, quoting for delivery at buyers' works, Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton	
Old iron rails	\$16.00 to \$16.50
Old steel rails, rerolling	14.25 to 14.75
Old steel rails, less than 3 ft.	12.50 to 13.00
Relaying rails, standard section, subject to inspection	24.00
Old carwheels	15.25 to 15.75
Heavy melting steel scrap	11.75 to 12.25
Frogs, switches and guards, cut apart	11.75 to 12.25
Shoveling steel	11.50 to 12.00
Steel axle turnings	9.50 to 10.00

Per Net Ton	
Iron angles and splice bars	\$15.25 to \$15.75
Iron arch bars and transoms	15.50 to 16.00
Steel angle bars	11.00 to 11.50
Iron car axles	19.75 to 21.25
Steel car axles	18.75 to 19.00
No. 1 railroad wrought	11.50 to 12.00
No. 2 railroad wrought	11.00 to 11.50
Cut forge	11.00 to 11.50
Steel knuckles and couplers	11.50 to 12.00
Steel springs	12.00 to 12.50
Locomotive tires, smooth	12.75 to 13.25
Machine shop turnings	6.50 to 7.00
Cast and mixed borings	5.75 to 6.25
No. 1 busheling	10.00 to 10.50
No. 2 busheling	7.25 to 7.75
No. 1 boilers, cut to sheets and rings	8.25 to 8.75
Boiler punchings	12.25 to 12.75
No. 1 cast scrap	11.75 to 12.25
Stove plate and light cast scrap	10.00 to 10.50
Railroad malleable	12.25 to 12.75
Agricultural malleable	10.75 to 11.25
Pipes and flues	8.50 to 9.00

**Cast-Iron Pipe.**—Municipal lettings continue to appear slowly. At Lima, Ohio, approximately 1500 tons is expected to be awarded this week, the tender of the leading interest being the lowest. New bids have been submitted at San Diego, Cal., and as one of the offers provided for the acceptance of the city's bonds in payment, it seems likely that the pipe will be bought, the disposal of the bonds being the obstacle in the way at a previous letting. The United States Cast Iron Pipe & Foundry Company secured about 2500 tons of pipe from the Canadian cities of Saskatoon and North Battleford. We have reduced our quotations \$1 a ton and

now quote as follows per net ton, Chicago: Water pipe, 4 in., \$28.50; 6 to 12 in., \$26.50; 16 in. and up, \$25.50, with \$1 extra for gas pipe.

## Philadelphia

PHILADELPHIA, PA., May 6, 1913.

Easier conditions rule in practically all iron and steel products. Foundry pig iron continues dull, but some buying in forge iron is reported. Pig-iron prices, while generally unchanged, are still inclined to be weak. The demand for billets, plates and shapes has been less active, although specifications against contracts are heavy. Sheets are in better demand. Premiums for prompt shipments of all classes of finished products, except for occasional small lots, have practically disappeared. Little business is moving in iron bars. Foundry coke has been fairly active but the movement in furnace coke is unimportant. The old material market is practically at a standstill.

**Iron Ore.**—Buyers are still awaiting developments. Importations at this port the past week include 18,999 tons from Sweden, 3100 tons from Venezuela, 8550 tons from Newfoundland, 10,639 tons from Spain and 14,760 tons from Cuba.

**Pig Iron.**—The movement in foundry grades has been very light. Buyers, while making somewhat better inquiries for moderate lots, are not placing orders for anything beyond near future needs, usually carload lots. Consumers still feel that bottom has not been reached and it is not unlikely that current quotations for standard eastern Pennsylvania foundry iron would be slightly shaded by some producers for a round lot order for early delivery or in sharp competition in the outlying parts of the district. While no inquiry for extended delivery is before the trade, sellers contend that they would not sell far ahead at quoted prices, as they closely approximate cost. The largest sale of foundry grades was to the Baldwin Locomotive Works, which purchased 1000 tons of low silicon cylinder foundry, against a 1500-ton inquiry. Delivery covers two months and the price was a shade under \$16 delivered. Cast-iron pipe makers have been taking odd lots of low-grade iron, but have no large inquiries out. Virginia pig iron has been inactive. Small lot business rules at \$14.50 at furnace for No. 2 X and \$14.25 for No. 2 plain, but concessions would no doubt be available from some makers if any reasonable inquiry for early delivery came out. Considerably more activity has developed in rolling mill forge. Sales of several thousand tons each have been made to two Schuylkill Valley consumers at prices slightly under \$16 delivered. Transactions involving at least 8500 tons are reported. Steel-making grades are quiet. A central Pennsylvania consumer of basic who was feeling the market for several thousand tons for third quarter has withdrawn the inquiry. Low phosphorus iron has been selling in small lots at current quotations. The present range of pig-iron prices being unprofitable to some Eastern producers, curtailment of production is in evidence. Two Lehigh Valley producers have each blown out a furnace. For near future delivery in buyers' yards in this district, the following range of prices about represents the market for standard brands:

Eastern Pennsylvania No. 2 X foundry	\$17.00 to \$17.25
Eastern Pennsylvania No. 2 plain	16.75 to 17.00
Virginia No. 2 X foundry	17.30 to 17.50
Virginia No. 2 plain	17.05 to 17.25
Gray forge	16.00
Basic	16.50
Standard low phosphorus	23.50

**Ferroalloys.**—Business in 80 per cent. ferromanganese has been confined to carloads for early delivery at \$61, seaboard. There has been no inquiry for forward ferromanganese, which is nominally quoted at the same price, owing principally to tariff uncertainties. Little business is moving in ferrosilicon.

**Billets.**—Eastern mills are again receiving inquiries from Western consumers, one for 1000 tons of rolling billets for May delivery coming out last week, but the leading local producer was unable to take the business. Mills in this district are well sold ahead but can take on only moderate orders for early shipment. Specifications on contracts have been heavy. For reasonably early shipment Eastern mills quote \$29 to \$30 delivered for basic open-hearth rolling billets and \$34 mill, minimum, for ordinary analysis forging billets.

**Plates.**—After a long continued period of buying activity, Eastern plate mills are now experiencing some decrease in the demand. Order books, however, are well filled and no let up of active mill operations is

yet in sight. Bridge plates continue in active demand and fair orders for boat plates are assured, several orders for ferry boats and other small steel vessels having practically been closed with shipbuilders. Eastern platemakers still maintain prices at 1.75c. delivered in this district although only on small miscellaneous business is the \$1 differential for universal plates insisted upon.

**Structural Material.**—There has been a decided falling off in the demand. Specifications on contracts have been heavy and therefore mill activities have not decreased although better shipments are available. The contract for the fabricated work for the St. Clair shops of the Philadelphia & Reading Railroad is credited to the Phoenix Company. Eastern makers' prices for plain shapes are now more in line with Western quotations, at 1.65c. delivered here, although on a few miscellaneous light shapes 1.75c. still rules.

**Sheets.**—A lively demand for sheets has developed, particularly for No. 16 gauge. Eastern mills are further booked ahead than for a long time and delivery on some sizes is not available inside of four weeks. Urgent demand for deliveries on orders are frequently being made by buyers. Prices for Eastern and Western sheets are now on a pretty even basis—1.90c. delivered here for No. 10 blue annealed—although Eastern makers occasionally obtain 1.95c. for smooth, loose-rolled sheets.

**Bars.**—Inquiry for iron bars has been less active, and the demand for steel bars for early shipment has also been quieter. General business has been confined to odd lots but mills have maintained recent quotations of 1.57½c. to 1.62½c. for ordinary iron bars, delivered in this vicinity. Steel bars continue firm at 1.55c. to 1.60c. here for either near future or forward shipment.

**Coke.**—A fair volume of business is moving in foundry coke, at prices ranging from \$2.75 to \$3.25 at oven, according to grade. Furnace coke has been quiet. For prompt shipment it is available at \$2 to \$2.15 at oven, although \$2.20 has been paid for special analysis grades. For delivery in consumers' yards in this territory the following range of prices, per net ton, about represents the market:

Connellsville furnace coke .....	\$4.05 to \$4.50
Connellsville foundry coke .....	4.90 to 5.35
Mountain furnace coke .....	3.75 to 4.10
Mountain foundry coke .....	4.50 to 5.00

**Old Material.**—Business is almost at a standstill. Consumers' yards are well filled with scrap and few inquiries are being made. On the other hand, sellers are not offering their holdings freely at the present market. Feeling that they would be unable to get additional supplies in any quantity at ruling quotations they are inclined to await better prices. While there has not been enough business moving to establish firm quotations the following range of prices, largely nominal, about represents the market for delivery in buyers' yards in this district, covering eastern Pennsylvania and nearby points, taking a freight rate varying from 35c. to \$1.35 per gross ton:

No. 1 heavy melting steel .....	\$12.50 to \$13.00
Old steel rails, rerolling (nominal) .....	15.00 to 15.50
Low phosphorus heavy melting steel scrap ..	17.00 to 17.50
Old steel axles (nominal) .....	18.00 to 19.00
Old iron axles (nominal) .....	26.00 to 27.00
Old iron rails .....	18.00 to 18.50
Old carwheels .....	14.00 to 14.50
No. 1 railroad wrought .....	15.00 to 15.50
Wrought-iron pipe .....	12.50 to 13.00
No. 1 forge fire .....	11.50 to 12.00
No. 2 light iron (nominal) .....	6.75 to 7.25
No. 2 cut busheling .....	9.00 to 9.50
Wrought turnings .....	9.50 to 10.00
Cast borings .....	9.50 to 10.00
Machinery cast .....	13.75 to 14.25
Grate bars, railroad .....	10.00 to 10.50
Stove plate .....	10.00 to 10.50
Railroad malleable (nominal) .....	12.75 to 13.00

## Cleveland

CLEVELAND, OHIO, May 6, 1913.

**Iron Ore.**—Cleveland ore firms have been unable to secure confirmation of a report from Pittsburgh to the effect that ore had been offered in that city at 25 cents under regular prices. Sellers assume that if such a concession was offered on standard ore it was made to dispose of some resale ore. The sale of the bulk of standard ores was made during the present season with a guarantee against a price decline and sellers will not cut prices on these ores in order to sell the small tonnage not disposed of, for if they should make price concessions they would be compelled to revise all existing contracts for these ores to the new price basis.

However, there are no established prices on low-grade ores and in view of the decline in pig-iron prices and the absence of a demand for ore since the general buying movement, it is probable that lower price quotations can be secured on low-grade ores than could be done a few weeks ago. Ore shipments by lake in April amounted to 866,387 tons, or four times as much as was shipped from the upper lake docks in April of last year. Much of this ore, however, did not reach lower Lake ports until May. The movement is now well under way and May shipments will be very heavy. We quote prices as follows: Old Range Bessemer, \$4.40; Mesaba Bessemer, \$4.15; old range non-Bessemer, \$3.60; Mesaba non-Bessemer, \$3.40.

**Pig Iron.**—No further decline is reported in foundry grades and the market appears to have become fairly well established at \$15, Valley furnace, for No. 2 for delivery through the remainder of the year. Cleveland furnaces are quoting this price for outside shipment, but the entire absence of local sales and inquiries makes the selling price for Cleveland delivery uncertain. The nominal local price for Cleveland delivery is \$15.50 at furnace for No. 2 or \$15.75, delivered, which will shut out Valley competition at \$15, furnace, but it is very likely that a definite inquiry would bring out a lower quotation. The market continues dull, although inquiry has improved slightly. Sellers are inclined to think that foundry prices have reached the bottom, but they are not looking for much activity in the market before June. Several consumers who have made inquiries in the past two weeks have decided to defer making purchases. Only two inquiries of any size are pending in this territory. One is from the Westinghouse Electric & Mfg. Company, which is in the market for its last-half requirements of Nos. 2 and 3 foundry iron for its Cleveland and Pittsburgh plants and the other is from an Akron furnace manufacturer for 900 tons of No. 2 for the last half. No further decline in prices of Southern iron is reported. All sellers are apparently adhering to \$12, Birmingham, for No. 2 for delivery through the remainder of the year. For shipment through the year we quote, delivered Cleveland, as follows:

Bessemer .....	\$17.90
Basic .....	\$16.25 to 16.50
Northern No. 2 foundry .....	15.75
Southern No. 2 foundry .....	16.35
Gray forge .....	15.50
Jackson County silvery, 8 per cent. silicon ..	20.55 to 21.05

**Coke.**—The only demand is for small lots of foundry grades for prompt shipment. Very few foundries have covered as yet for their last-half requirements. Prices are slightly easier and the market is not firm. Most of the better grades of 72-hr. foundry coke are being offered at \$3 per net ton at oven for delivery through the remainder of the year and some good coke can be had at a slightly lower price. Connellsville furnace coke is quoted at \$2.15 to \$2.25 for prompt shipment and \$2.50 for contract.

**Finished Iron and Steel.**—New demand is only moderate and some of the mills are getting in better shape on deliveries. As a result lower premiums are being asked for material for early delivery. One Pittsburgh district mill is offering Bessemer steel bars for delivery in two to four weeks at a premium of \$2 to \$4 a ton above regular prices. Some sizes of structural material can be secured at 1.50c., Pittsburgh, for delivery in about 30 days. A local mill continues to quote plates at 1.60c., Pittsburgh, for early delivery. The implement manufacturers in this territory who had not previously placed steel bar contracts are now in the market for their requirements and the mills are not adhering to their recent stand of taking these contracts only for delivery through the last half. Considerable inquiry has come from Valley mills for sheet bar contracts for the last half, and this has resulted in price quotations that are considerably lower than have prevailed recently, these quotations being around \$26.50, Youngstown, for Bessemer sheet bars. Forging billets are in moderate demand and are quoted in this market by an Eastern mill at \$34.50 to \$35, Pittsburgh. In structural material there is a fair volume of inquiry for new work that has not yet been placed. The contract for 800 tons for new bins and trestles for the Marting and Iron-ton blast furnaces has been placed with the Variety Iron & Steel Works Company, Cleveland, and the Riverside Bridge Company, Martins Ferry, Ohio, each company getting about one-half of the tonnage. The Lackawanna Bridge Company has taken 230 tons for a new building for the American Stove Company at Bedford, Ohio. In rails the Carnegie Steel Company has taken 600 tons of 100-lb. Bessemer sections for the Toledo Railways & Light Company, Toledo, Ohio.



The demand for iron bars is more active, local mills having taken a round tonnage in railroad orders. Iron bars are firm at 1.60c., Cleveland, as a minimum quotation. Warehouse prices are unchanged at 2.10c. for steel bars and 2.25c. for plates and structural material.

**Old Material.**—The market is almost lifeless, the only activity being in car lot sales. None of the mills in this territory is in the market for material for future delivery. The absence of a demand has resulted in a further weakening of prices, which are expected to go still lower. Cast scrap and old carwheels have declined 50c. a ton. Other quotations are generally unchanged, but these are largely nominal. We quote, f.o.b. Cleveland, as follows:

Per Gross Ton.	
Old steel rails, rerolling .....	\$14.50 to \$15.00
Old iron rails .....	16.00 to 16.50
Steel car axles .....	18.75 to 19.25
Heavy melting steel .....	12.50 to 12.75
Old carwheels .....	14.50 to 15.00
Relaying rails, 50 lb. and over .....	23.00 to 25.00
Agricultural malleable .....	11.75 to 12.00
Railroad malleable .....	13.50 to 14.00
Light bundled sheet scrap .....	10.00 to 10.50
Per Net Ton.	
Iron car axles .....	\$21.00 to \$21.50
Cast borings .....	7.50 to 8.00
Iron and steel turnings and drillings .....	5.75 to 6.00
Steel axle turnings .....	9.00 to 9.25
No. 1 busheling .....	11.25 to 11.75
No. 1 railroad wrought .....	12.50
No. 1 cast .....	11.75 to 12.00
Stove plate .....	9.00 to 9.50
Bundled tin scrap .....	11.00 to 11.50

## Cincinnati

CINCINNATI, OHIO, May 7, 1913.—(By Telegraph.)

**Pig Iron.**—Several local iron merchants state that the present market conditions are almost unprecedented in the history of the trade. A very small majority of consumers of either foundry or basic iron have covered for the last half and there is quite a number who are in need of a supply to finish out the second quarter. In spite of this, open inquiries are very scarce, and while buyers are evincing an intense interest in the market, practically none is disposed to take hold. In many instances this is attributed to the probable effect of tariff legislation and while present quotations are very close to the cost line, there are soft spots in the market that tend to cause a further hesitancy on the part of buyers. The largest reported inquiry is from central Indiana for 1000 tons of analysis iron for last-half shipment. A central Ohio melter wants 500 tons of mixed foundry grades for the same delivery and there are several smaller inquiries, mostly for nearby movement. The nominal quotation on Southern No. 2 foundry is \$12, Birmingham, for any delivery this year, although a few furnaces are holding out for a higher price. It is rumored that \$11.75 has been done on some small prompt shipment lots. In the face of this one sale of 500 tons of No. 3 foundry was made in the South at \$11.75 Birmingham basis, and for early shipment, Northern foundry iron is unchanged but weak at \$15 Ironton, for either prompt or forward delivery but basic is a trifle stronger. Based on freight rates of \$3.25 from Birmingham and \$1.20 from Ironton, we quote, f.o.b. Cincinnati, as follows:

Southern coke, No. 1 foundry and 1 soft ..	\$15.75 to \$16.25
Southern coke, No. 2 foundry and 2 soft ..	15.25 to 15.75
Southern coke, No. 3 foundry .....	15.05 to 15.55
Southern, No. 4 foundry .....	14.85 to 15.35
Southern gray forge .....	14.65 to 15.15
Ohio silvery, 8 per cent. silicon .....	20.20 to 20.70
Southern Ohio coke, No. 1 .....	17.20 to 17.70
Southern Ohio coke, No. 2 .....	16.20 to 16.70
Southern Ohio coke, No. 3 .....	15.95 to 16.45
Southern Ohio Malleable Bessemer .....	16.45
Basic, Northern .....	16.45 to 16.95
Lake Superior charcoal .....	18.75 to 19.25
Standard Southern carwheel .....	27.25 to 27.75

(By Mail)

**Coke.**—Furnace coke is not so firm as has been quoted. The reluctance of furnacemen to place any large future contracts has doubtless been the main cause for a softening in quotations. Standard brands of 48-hr. Connellsville coke are obtainable, for either contract or prompt shipment, at \$2.10 to \$2.25 per net ton at oven. As low as \$2 has been done, but the reported scarcity of labor in the three coke producing districts is calculated to retain prices at a level that may be considered a trifle above the mark, when a comparison is made with present pig-iron quotations. In the Pocahontas and Wise County fields a slightly better level has been maintained. A Southern consumer has bought 20,000 tons of Wise County coke for last half shipment. Foundry coke is still moving slowly, and is quotable around \$3 to \$3.25 per

net ton at oven in all three fields, but it is reported that the lower figure has been shaded 25c. a ton on desirable orders.

**Finished Material.**—The local warehouses are doing an excellent business. Building operations are on the mend, and everything that enters into construction supplies, from a wire nail to a steel girder, shows an increasing demand. The local warehouse price on steel bars remains at 2.10c. to 2.15c. and on structural shapes about 5c. per 100 lb. higher. There is a better demand for galvanized sheets from both the domestic and export trade.

**Old Material.**—The market is very dull. No large specifications from the rolling mills are being received, and the foundries are only purchasing on a hand-to-mouth basis. Prices are not firm, and on several classes of scrap lower figures are predicted before the turn comes. The minimum figures given below represent what dealers are willing to pay for delivery in their yards, southern Ohio and Cincinnati, and the maximum quotations are dealers' prices f.o.b. at yards:

Per Gross Ton.	
Bundled sheet scrap .....	\$9.75 to \$10.25
Old iron rails .....	13.25 to 13.75
Relaying rails, 50 lb. and up .....	20.25 to 20.75
Rerolling steel rails .....	12.25 to 12.75
Melting steel rails .....	10.25 to 10.75
Old carwheels .....	12.00 to 12.50
Per Net Ton.	
No. 1 railroad wrought .....	\$10.25 to \$10.75
Cast borings .....	5.50 to 6.00
Steel turnings .....	5.50 to 6.00
No. 1 cast scrap .....	10.00 to 10.50
Burnt scrap .....	7.25 to 7.75
Old iron axles .....	17.50 to 18.00
Locomotive tires (smooth inside) .....	11.25 to 11.75
Pipes and flues .....	6.75 to 7.25
Malleable and steel scrap .....	8.50 to 9.00
Railroad tank and sheet scrap .....	5.50 to 6.00

## Birmingham

BIRMINGHAM, ALA., May 5, 1913.

**Pig Iron.**—While the pig iron market in the South is still very dull there is no announced intention of curtailing production. The make is at high-water mark still in the Southern territory. The accumulation is steady but there is yet plenty of room on the yards. Prices are still weak and \$12 per ton for No. 2 foundry is the average. The belief is expressed by consumers that prices will go lower. Makers, however, take a more optimistic view and say that there will be a change for the better in a short time. That there will be need of a goodly tonnage of iron is the anticipation, but consumers persist in holding off and sales being made just now are in small lots and far between. Not only are the several steel plants in the Southern territory being worked quite steadily but in some departments record outputs are being made. At the Ensley plant last month 47,500 tons of rails alone were produced. The average run is around 35,000 tons. Foundries and machine shops are still hopeful of an improvement in general conditions. We quote pig iron as follows:

No. 1 foundry and soft .....	\$12.50 to \$13.00
No. 2 foundry and soft .....	12.00 to 12.50
No. 3 foundry .....	11.50 to 12.00
No. 4 foundry .....	11.00 to 11.50
Gray forge .....	10.50 to 11.00
Basic .....	12.50 to 13.00
Charcoal .....	24.00 to 24.50

**Cast Iron Pipe.**—The shops in this district are melting a large amount of iron and there is not a very great accumulation of their product. Negotiations that are on promise to result in some healthy orders being landed before long. The prediction is made that pipe plants will keep in steady operation through the remainder of the year and that the melt of iron will be satisfactory. Work on the two cast iron pipe plants reported heretofore is progressing well and by fall they will be ready for operation. We quote \$23.50 for 4-in. pipe and \$21.50 for 6-in.

**Coal and Coke.**—There is a good demand for coke and some manufacturers are quoting as high as \$4 f.o.b. ovens for foundry. The Tennessee Coal, Iron & Railroad Company in addition to buying some coke from the smaller producers has found it necessary to blow in 200 of its old bee-hive ovens and will add from 150 to 200 tons a day to the output. Its by-product coke ovens at Corey, near Birmingham, are in full operation. Some by-product coke was sold in this district for shipment to the West, as far as to California. There is a desire to accumulate some coke but so far there is no prospect of this, as the coke is being used or shipped out as quickly as it is manufactured. The coal production in the South is heavy and railroads are being urged to furnish sufficient cars. There is some apprehension that efforts to



reorganize the coal miners in Alabama will bring about labor troubles. Organizers for the United Mine Workers are in the field. We quote furnace coke at \$3 to \$3.50 per net ton at ovens, and foundry coke at \$3.50 to \$4.25.

**Old Material.**—There is a fair demand for scrap with prices little changed. We quote the market as follows, per gross ton, dealers' yards, some of the prices being nominal:

Old iron axles .....	\$15.00 to \$15.50
Old steel axles .....	15.00 to 15.50
Old iron rails .....	13.50 to 14.00
No. 1 railroad wrought .....	12.50 to 13.00
No. 2 railroad wrought .....	10.50 to 11.50
No. 1 country wrought .....	10.00 to 10.50
No. 2 country wrought .....	9.00 to 9.50
No. 1 machinery cast .....	10.00 to 10.50
No. 1 steel scrap .....	10.50 to 11.00
Tram carwheels .....	11.00 to 11.50
Standard carwheels .....	12.50 to 13.00
Light cast and stove plates .....	8.50 to 9.00

## Boston

BOSTON, MASS., May 7, 1913.

**Old Material.**—The market is almost lifeless, not enough transactions occurring to give an accurate line on prices, which may be slightly lower than current lists. The quotations given below are based on prices offered by the large dealers to the producers and to the small dealers and collectors, per gross ton, carload lots, f.o.b. Boston and other New England points which take Boston rates from eastern Pennsylvania points. In comparison with Philadelphia prices the differential for freight of \$2.30 a ton is included. Mill prices are approximately 50c. a ton more than dealers' prices:

Heavy melting steel .....	\$10.50 to \$10.75
Low phosphorus steel .....	13.50 to 14.50
Old steel axles .....	14.50 to 15.00
Old iron axles .....	22.50 to 23.00
Mixed shafting .....	13.50 to 13.75
No. 1 wrought and soft steel .....	10.75 to 11.00
Skeleton (bundled) .....	9.00 to 9.50
Wrought-iron pipe .....	9.50 to 10.00
Cotton ties (bundled) .....	9.50 to 9.75
No. 2 light .....	4.00 to 4.50
Wrought turnings .....	7.00 to 7.50
Cast borings .....	7.00 to 7.50
Machinery, cast .....	13.00 to 13.50
Malleable .....	10.50 to 11.00
Stove plate .....	8.50 to 9.00
Grate bars .....	7.50 to 7.75
Cast-iron carwheels .....	14.00 to 14.50

## St. Louis

ST. LOUIS, MO., May 5, 1913.

A survey of the market shows continued activity in pig iron, a slight slackening in new business in finished products, continued quietness in coke and a discouraged feeling in scrap, but with no lessening of specifications on contracts or in the urgency of the demands for shipments in all divisions.

**Pig Iron.**—While the buying flurry of ten days ago has not been maintained in strength the past week there has been considerably more activity in the market than prevailed in the period preceding the opening of the buying, and both inquiries and sales are in better volume. At the same time prices have shown no appreciation and representatives of furnaces do not seem to feel sure that the bottom has been reached. Buyers, as usual under such conditions, are spreading reports of even lower prices than can be traced. Purchases have included quite a number of lots of 500 tons and less, but more of the buying is for last half and last quarter than previously, most of the preceding purchases having been for second quarter, with a few for third quarter. Inquiries are mostly for 500 tons or less for the last half, but included among them are one for 1000 tons of No. 2 Southern, one for 1500 tons of No. 2 Southern, one for 600 tons of high manganese and one for 750 tons of No. 2 Southern. The quoted prices are \$12 for No. 2 Southern, Birmingham; \$15 for No. 2 Northern, Iron-ton, and \$16.75 for Chicago No. 2 X.

**Coke.**—Buying continues in small lots. Melters are urging forward their allotments, showing that they are using both coke and iron as received, but no large new inquiries or sales are in sight. Prices here are lower for furnace coke. By-product coke stands as last reported.

**Finished Iron and Steel.**—There has been a slight slackening in new business, but this is not regarded pessimistically as the existing contracts run so far ahead that there is little occasion for buyers to be especially anxious about placing future orders. Specifications on contracts still hold up, and while deliveries are getting better there is still much urgency of demand for material allotted. In standard rails there is considerable

new inquiry aggregating about 15,000 tons, most of which is expected to be closed this week. Track fastenings have been in fair demand. Business in light rails has been rather slack, but this is seasonal rather than otherwise. Reinforcing bars are very active. The agricultural and wagon interests are busy and using all the material they can get.

**Old Material.**—Prices generally are lower, with comparatively little to encourage expectation of increases very soon. Relaying rails alone are active and there is quite a demand for them with unchanged prices. The lists out include one of 1800 tons from the Missouri Pacific and one of 400 tons from the Frisco, the latter closing this week. Most of the Missouri Pacific list went to the Colorado Fuel & Iron Company. Heavy buyers are all out of the market and the mills for the most part are under embargo. We quote dealers' prices, f.o.b. St. Louis, as follows:

Per Gross Ton.	
Old iron rails .....	\$12.75 to \$13.25
Old steel rails, re-rolling .....	13.00 to 13.50
Old steel rails, less than 3 ft. ....	11.00 to 11.50
Relaying rails, standard section, subject to inspection .....	22.50 to 23.50
Old carwheels .....	13.50 to 14.00
Heavy melting steel scrap .....	11.00 to 11.50
Frogs, switches and guards cut apart .....	10.50 to 11.00

Per Net Ton.	
Iron fish plates .....	\$11.50 to \$12.00
Iron car axles .....	19.00 to 19.50
Steel car axles .....	16.50 to 17.00
No. 1 railroad wrought .....	10.75 to 11.25
No. 2 railroad wrought .....	10.25 to 10.75
Railway springs .....	9.00 to 9.50
Locomotive tires, smooth .....	11.00 to 11.50
Wrought arch bars and transoms .....	14.00 to 14.50
Steel couplers and knuckles .....	9.00 to 9.50
No. 1 dealers' forge .....	7.50 to 8.00
Mixed borings .....	5.50 to 6.00
No. 1 busheling .....	9.00 to 9.50
No. 1 boilers, cut to sheets and rings .....	6.00 to 6.50
No. 1 cast scrap .....	9.00 to 9.50
Stove plate and light cast scrap .....	8.00 to 8.50
Railroad malleable .....	9.50 to 10.00
Agricultural malleable .....	8.00 to 8.50
Pipes and flues .....	6.50 to 7.00
Railroad sheet and tank scrap .....	5.50 to 6.00
Railroad grate bars .....	7.00 to 7.50
Machine shop turnings .....	6.75 to 7.25
Bundled sheet scrap .....	5.50 to 6.00

## Heavy Standard Oil Buying

Estimated That 250,000 Boxes Were Placed in Wales—Semi-Finished Steel Weak

(By Cable)

A big business has been done in tin plates and mills are restarting. The Standard Oil Company has bought everything available up to June to shipment at 14s. 6d. basis for quarters, probably 250,000 boxes. Large orders have also been booked for Canada and the Far East. Semi-finished steel is weak, but French sellers have withdrawn. Belgian sellers quote 94s. for 4-in. and 96s. for 2-in. and the German Steel Works Union would compete for good lines. Business in Cleveland pig iron remains cramped. Stocks of pig iron in Connal's stores are 217,893 tons, against 213,682 tons last week. We quote as follows:

Cleveland pig-iron warrants (Tuesday), 67s. 6d., against 67s. 1d. a week ago.

No. 3 Cleveland pig iron makers' price, f.o.b. Middlesbrough, 68s., against 67s. 6d. a week ago.

Ferromanganese, £11 12s. 3d., f.o.b. shipping port.

Steel sheet bars (Welsh) delivered at works in Swansea Valley, £5 10s.

German sheet bars, f.o.b. Antwerp, nominally 103s.

German 2-in. billets, f.o.b. Antwerp, nominally 100s.

German basic steel bars, f.o.b. Antwerp, £5 11s., an advance of 1s.

Steel bars, export, f.o.b. Clyde, £7 17s. 6d.

Steel joists, 15-in., export, f.o.b. Hull or Grimsby, £7 2s. 6d., a decline of 2s. 6d.

German joists, f.o.b. Antwerp, £5 12s. to £5 15s.

Steel strip plates, Scotch, delivered local yards, £8 7s. 6d.

Steel black sheets, No. 28, export, f.o.b. Liverpool, £9 15s.

Steel rails, export, f.o.b. works port, £6 15s.

Tin plates, cokes, 14 x 20, 112 sheets, 108 lb., f.o.b. Wales, 14s. 3d.

(By Mail)

The Cause of the "Squeeze" in Pig Iron—Sentiment Not Particularly Hopeful

LONDON, ENGLAND, April 26, 1913.

The "shorts" in the Cleveland pig-iron warrant market have been squaring off privately, but the ring-

leaders of the opposite camp are emphatic in the opinion that a great deal of uncovered stuff has yet to be dealt with. It appears now that much of the over-sold account was of German origin. To make the position quite clear it should be said that Walker Maynard & Co., who make the Redcar brand of Cleveland iron, sell it only on the condition that it is not to be put into public store. Redcar iron is largely sold to Japan by German houses, which to protect themselves when buying the iron sell warrants against it. This year, owing to the manipulation of warrants, Japan will only offer 61s 6d or so, for Redcar, this being reckoned its value on the basis of 62s to 62s 6d for three months Cleveland warrants. However, holders of the iron named have been wanting 68s or 69s a ton, and the brand has, of course, been unsalable, while the warrants which they sold as a hedge have not been obtainable except at squeeze rates. It is merchants and dealers engaged in perfectly legitimate business of this character who largely have been the sufferers, and who have built up the bear account. It is not surprising, therefore, that a good deal of soreness is felt over the situation. Nobody knows when the squeeze will come to an end, but opinion inclines to the belief that it will last out till the end of May. If so, the perpetuation for another month or so of the present miserable state of things will still further damage trade. Already the Midland pig-iron people cannot market their output, and on all sides the cry for orders grows louder and more insistent.

The tin plate section is a little firmer, not because business is much better, but because of the rise of £20 or so in the price of tin. This week again business has been done for the Standard Oil Company—25,000 boxes at 14s 3d May and June shipment—the sellers being as before Richard Thomas & Co. The business has no special significance, being merely connected with the possible delay in deliveries of American plates through the floods. There are now 125 mills idle in Wales. At a meeting held a few days ago, the Steel Smelters Union decided that 50 boxes a shift is a sufficient make. The reopening of the Balkan market is being anticipated with utmost eagerness, for it is popularly supposed that the troubles of the Welsh tin plate trade are largely due to the cessation of business with Roumania, though it is far more reasonable to regard this as an incident merely, the basic trouble being the inordinate extension of plants. However, some plates are now being shipped to Roumania and the event is heralded joyfully.

Paralysis has befallen semi-finished steel. Welsh bars are about £5 10s, and efforts to buy at £5 5s have not succeeded. Continental stuff is offered in all directions at cut rates, France and Belgium competing sharply, though why Belgium in the throes of a gigantic strike wanted to go out of the way to cut prices baffles comprehension. Of course, the strike will collapse in a day or two, but this week Belgian 2-in. billets have been sold at 95s f. o. b. Antwerp, whereas at the end of March they stood at 105s or a trifle more. Even at the decline nobody wants to buy, for the impression has taken firm hold that general trade is reacting steadily. As for finished Continental material, bars have been done at £5 10s by works, and at even less by merchants ready to run the risk of the market by speculating. The general feeling is rather depressed.

## German Markets Lack Animation

Steel Bars Continue to Decline—The Steel Syndicate Makes a Hopeful Report

BERLIN, April 24, 1913.

The Belgian strike caused some good orders for export to be placed in the Rhenish-Westphalian district, but the bar trade appears not to have derived the advantage from the strike that had been expected. The price situation continues rather weak. The Düsseldorf Exchange has reduced its quotation for bars 2 marks, now quoting 116 to 120 marks. For quick delivery most of the mills are charging 118 to 120 marks, but for longer periods 115 to 118 marks are common, with some business at even lower rates. The export price remains at 110 marks f.o.b. Antwerp.

The market position for cold-rolled bands has also evidently changed considerably for the worse. While the trade combination maintains its last price of 210 marks, outside works are offering bands in 50 to 100 ton lots at 175 to 185 marks, for delivery till the end of the year. The association in this specialty terminates at the end of June unless previously renewed, and this

competition from independent mills will apparently make it more difficult to continue the organization.

### The Syndicate's Monthly Report

The Steel Works Union gave out its usual market survey to-day. It says that home consumers have for the most part placed their orders for semi-finished steel since business for the June quarter was declared open at the end of February, and that they have taken the same amounts as previously. Calls for delivery are satisfactory. The strong position of the shipbuilding trade continues; the shipyards are supplied with orders far into 1914, and hence mills producing material for the shipbuilding industry are well supplied with work. Construction and machinery shops have enough work to hold them till the end of the year. All this leads the union to expect that the demand will gradually grow more active. The Prussian railroad authorities have placed supplementary orders for steel rails, ties and supplies for the current fiscal year, with the result that the total orders from this source exceed those of a year ago by above 134,000 tons. Considerable amounts have also been contracted for recently by private and minor railroads. The belief is expressed that good business will come from Balkan countries after the war has ceased, large plans for railroad building being in contemplation there. Specifications in mining rails, which had slackened up in March, are now coming in more briskly. Business in grooved rails continues good; the mills have orders running into next year, some to the middle of the year. Home business in structural shapes is pronounced satisfactory; but dealers, particularly in the larger towns, continue to manifest a waiting tendency. An improvement is not expected until the money market is easier and the political outlook freer from doubtful elements. The foreign trade is taking amounts on contract satisfactorily, but new orders are coming in slowly.

The West German Kartell of Iron Dealers voted yesterday at Düsseldorf to make no change in its prices for bars, plates and bands, but to await further developments.

Germany's exports of iron and steel in March established a new record with 602,928 tons. This was 133,888 tons more than for March, 1912, and more than 100,000 tons in excess of the exports for February, 1913. The excess of exports over imports was 558,919 tons, which also denotes a high record.

The Belgian strike, declared off to-day, has had a marked effect in depressing prices in that country.

## Buffalo

BUFFALO, N. Y., May 6, 1913.

**Pig Iron.**—New business has been of small volume. The last two days, however, have shown some improvement in inquiry, although it is for small tonnages only, but there are some indications that the improvement in this direction may continue. Buyers still show hesitancy in closing for requirements very far into the future, for they are uncertain as to what their needs will be over the next few months and some of them fear that labor complications may affect the regular course of foundry output. Shipments on contracts continue to go forward at a rapid rate and no stocks are being accumulated in furnace yards. For current quarter and last-half delivery we quote as follows, f.o.b. Buffalo:

No. 1 foundry .....	\$15.75 to \$16.00
No. 2 X foundry .....	15.50 to 15.75
No. 2 plain .....	15.50
No. 3 foundry .....	15.25 to 15.50
Gray forge .....	15.25
Malleable .....	16.00
Basic .....	16.25 to 17.00
Charcoal .....	18.00 to 19.00

**Finished Iron and Steel.**—Specifications are being placed against contracts in good volume, and there are very few cancellations from failure to specify monthly quotas in full. While new business is light, pressure for deliveries continues to be great. The most notable change is the ability of Eastern mills to make prompt shipments and their reduction in price to 1,50c., Pittsburgh, for structural material and plates on attractive specifications. Business in black and galvanized sheets has been good for the week, with deliveries somewhat easier. Orders for wrought pipe are also coming in quite freely. The week has also shown good demand for track supplies from electric traction roads. Orders have been placed for about 600 tons of reinforcing bars for the addition to the plant of Yawman & Erbe at Rochester. It is understood that the tonnage has been divided between two mills in order to obtain delivery



within the time required. The Lackawanna Steel Company last week received an order for 2000 tons of steel sheet piling  $12\frac{3}{4} \times \frac{3}{4}$  in., to be used on Erie Barge Canal work at Bushnell's Basin and Fairport, N. Y. A large amount of fabricated structural steel work is developing right along and figures are soon to be taken on a number of structures taking good-sized tonnages of steel. Bids are being received for 600 tons for the Williamsport, Pa., high school. The Phoenix Bridge Company has a contract for the bridge over the Erie Canal at Phoenix, N. Y., calling for 750 tons.

**Old Material.**—Market conditions remain dull, with a marked lack of demand in most all commodities. An exception to the general inactivity is noted in cast borings for which there is a fair demand at \$8 to \$8.50. In other lines prices are weaker, although not notably changed. Dealers are holding back and are not inclined to sell at prices at present obtainable. We quote as follows, per gross ton, f.o.b. Buffalo:

Heavy melting steel .....	\$12.00 to \$12.75
Boiler plate, sheared .....	15.00 to 15.50
No. 1 busheling scrap .....	11.50 to 12.00
No. 2 busheling scrap .....	9.00 to 9.50
Low phosphorus steel .....	17.00 to 17.50
Old iron rails .....	15.00 to 15.50
No. 1 railroad wrought .....	14.00 to 14.50
No. 1 railroad and machinery cast scrap....	13.75 to 14.25
Old steel axles .....	17.50 to 18.00
Old iron axles .....	24.00 to 24.50
Old carwheels .....	15.00 to 15.50
Railroad malleable .....	13.25 to 13.75
Locomotive grate bars .....	10.50 to 11.00
Stove plate (net ton) .....	9.75 to 10.00
Wrought pipe .....	10.00 to 10.50
Wrought iron and soft steel turnings .....	7.00 to 7.50
Clean cast borings .....	8.00 to 8.50
Bundled tin scrap .....	17.00

## New York

NEW YORK, May 7, 1913.

**Pig Iron.**—Some business, chiefly pipe and mill iron, has been reported in eastern Pennsylvania, but in the territory solicited from New York pig iron offices the market seems to have come practically to a standstill. The inquiry for 2000 tons sent out by an electrical machinery manufacturer two weeks ago has apparently not yet resulted in business. In eastern Pennsylvania, partly because of market conditions and partly perhaps because of an interruption of iron ore shipments in New Jersey, another blast furnace has been put on the idle list. In the absence of activity in New England and the Hudson valley the market can only be judged from some reported quotations. These represent \$14.50 to \$14.75 for No. 2 X at Virginia furnace, \$15.50 to \$15.75 at Buffalo, and \$16.25 at Lehigh or Schuylkill valley furnace. Buffalo furnaces generally count on the advantage of Erie Canal freights by the middle of May to get to tidewater or to Long Island Sound points. Freight to New York was \$1.25 to \$1.50 by canal for a part of last season. Owing to flood damage the opening of navigation this year will be delayed until late in May. Foundries in some cases bought freely in the latter part of last year and took in their iron according to contract so as to have good stocks as a safeguard against winter delays. The open winter has left them with plenty of iron and many of them will not need to buy until the summer is well along. Meantime the decline in prices keeps them out of the market and selling firms have concluded that there is nothing gained in going out for business. We quote Northern iron for tidewater delivery as follows: No. 1 foundry, \$17.50 to \$17.75; No. 2 X, \$16.75 to \$17.25; No. 2 plain, \$16.50 to \$16.75. Southern iron is quoted at \$17.50 to \$17.75 for No. 1 foundry and \$16.75 to \$17.25 for No. 2.

**Structural Material.**—Quite a reassuring number of contract awards for steel fabrication came to light, but the especially significant point is that most of them involved early deliveries. In some cases there is a wide belief that the plain material required will move at 1.45c., Pittsburgh, from other than Pittsburgh mills. The guess was hazarded even that assuming that some of this work were blocked to aggregate a round tonnage, less than 1.40c. would be done, but it is only fair to say that this is not the general view taken. New projects are not numerous and most of the activity still lies outside of the metropolitan district. Deliveries are not much changed and the 1.60c., Pittsburgh price, is still asked for delivery in four to six weeks, although a desirable rolling can be closed at 1.50c. The Levering & Garrigues Company is conspicuous among bidders for steel structures and awards to it include the following: 200 tons for the General Electric Company at Pittsfield, Mass.; 1500 tons for the Boston City Club House; 1500 tons for the building at Court and Joralemon streets,

Brooklyn, (incorrectly reported last week); 625 tons for a loft on Broadway and Twelfth street and 600 tons for a cathedral in Newark. The New England Structural Company has closed for three dormitories, 1750 tons; the Phoenix Iron Company has taken 1250 tons for Philadelphia & Reading car repair shops at St. Clair; the Radley Steel Construction Company, 360 tons for a loft on West Twenty-ninth street; Hay Foundry & Iron Works, 350 tons for a store house in Newark; Dietrich Brothers, Baltimore, 700 tons for Johns Hopkins University, Baltimore, and Lewis F. Shoemaker & Co. has taken the following among others: 825 tons for the Mountain Ice Company at Lake Hopatcong, 425 tons for a bank building at Williamsport, Pa., and 300 tons for the Boston & Maine at Mechanicville, N. Y. Another recent contract which has been closed involves 320 tons for 12 track scales for the Baltimore & Ohio and it is understood that the Lackawanna Steel Company is to furnish about 3000 tons of sheet piling for Erie Canal work in the western part of the State. The Boston Bridge Works has taken about 100 tons for the Central Railroad of New Jersey, the Fort Pitt Bridge Works, 100 tons for New York Central terminal work and two apartment houses in New York, each calling for about 1200 tons, have been closed, and recently the American Bridge Company took 600 tons for the New York Central terminal work in New York. Besides the large amounts of structural material which will be needed for the subway constructions of the Interborough and Brooklyn transit companies, there is likelihood of some long steamship piers being built in New York and the proposition is again up for consideration for improving railroad facilities on the Hudson River water front in New York. Quotations for mill shipments are 1.61c. to 1.66c., New York, depending largely on the time of delivery, and 2.15c. from store. Shipments in a few weeks still obtain \$1 to \$2 a ton additional.

**Plates.**—Bids went in Tuesday for 6000 tons of plates for two colliers to be built at the Mare Island Navy Yard, San Francisco. Eastern mills report no better deliveries nor any change in price. Some large manufacturing contracts have otherwise been placed for last half at 1.50c., Pittsburgh. In car building, no new inquiries have developed, but instead the proposal of the Utah Railways to buy 400 cars has been indefinitely postponed. Early last week the Cambria Steel Company closed with the Baltimore & Ohio for 500 all-steel hopper cars. Quotations are 1.61c. to 1.66c., New York, for mill shipments in the last half and 1.76c., New York for shipment in two to four weeks.

**Bars.**—Specifications on contracts and new inquiry continue in fair volume. Some of the larger companies find it necessary to refuse a considerable amount of business owing to the early deliveries demanded and some of this is being placed at slight premiums. Some additional reductions in bar iron prices reported were denied by the companies involved and it remains that some of the larger bar iron producers are booked sufficiently far to make them somewhat independent. Railroad spikes are easier and track bolts are perhaps being obtained somewhat earlier than recently, deliveries with different mills ranging from four weeks to 60 days. We quote bar iron at 1.65c. to 1.70c., New York, while steel bars remain at 1.56c. for extended delivery, with premiums for prompt shipment, and store prices are 2.05c. for steel bars and 2.10c. for iron bars.

**Ferroalloys.**—A few small orders have been placed for 80 per cent. ferromanganese, but the market continues dull, with inquiry for small quantities only. Although the principal agencies continue to ask \$61, Baltimore, this price has been shaded a little. Quotations for 50 per cent. ferrosilicon are unchanged at \$75, Pittsburgh, for carloads, \$74 for 100 tons and \$73 for 600 tons and over.

**Cast-Iron Pipe.**—The Department of Water Supply, Gas and Electricity of the city of New York will open bids May 9 from contractors for an extension to the high-pressure fire protection system of Brooklyn, which will require 2000 tons of 8, 12 and 16-in. pipe and specials, and on the same day will also open bids on 1000 tons of ordinary 6 and 12-in. pipe and specials for the Manhattan pipe supply yard. Business coming from private buyers is of moderate volume. Ridiculously low prices have been named by some pipe makers in connection with recent public lettings in New England which conservative manufacturers have refused to meet. Prices of carload lots of 6-in. at tidewater, New York, range from \$23 to \$24 per net ton.

**Old Material.**—Railroad lists this month are larger than usual, thus disappointing dealers who had expected that the mild winter had brought out such a



large quantity of old material from railroads that they would have considerably less to offer in the spring months. The additional supply comes in sight on an exceedingly quiet market and is expected to have the effect of further depressing prices. Dealers are encountering increasing difficulty in having shipments on old contracts accepted. Some little movement has occurred in cast scrap, but heavy melting steel scrap and rolling mill stock have been practically neglected. Old carwheels are hard to move. Dealers' quotations are about as follows, per gross ton, New York and vicinity:

Old boiler and T rails for melting.....	\$10.00 to \$10.50
Heavy melting steel scrap.....	10.00 to 10.50
Relaying rails.....	22.00 to 22.50
Rebuilding rails (nominal).....	13.50 to 14.00
Iron car axles.....	24.00 to 24.50
Old steel car axles.....	15.75 to 16.25
No. 1 railroad wrought.....	12.75 to 13.25
Wrought-iron track scrap.....	11.75 to 12.25
No. 1 yard wrought, long.....	11.50 to 12.00
No. 1 yard wrought, short.....	10.50 to 11.00
Light iron (nominal).....	4.50 to 5.00
Cast borings.....	7.50 to 8.00
Wrought turnings.....	7.50 to 8.00
Wrought pipe.....	10.25 to 10.75
Old carwheels.....	13.50 to 14.00
No. 1 heavy cast, broken up.....	11.00 to 11.50
Stove plate.....	8.75 to 9.25
Locomotive grate bars.....	8.00 to 8.50
Malleable cast.....	11.00 to 11.50

## Metal Market

NEW YORK, May 7, 1913.

### The Week's Prices

Copper, New York.		Tin.		Lead.		Spelter.	
May.	Lake.	Electro-lytic.	New York.	New York.	St. Louis.	New York.	St. Louis.
1.....	15.87½	15.50	49.87½	4.50	4.35	5.55	5.40
2.....	15.87½	15.37½	49.40	4.50	4.35	5.55	5.40
3.....	15.87½	15.37½	.....	4.50	4.35	5.55	5.40
4.....	16.00	15.55	49.90	4.35	4.20	5.55	5.40
5.....	16.00	15.62½	50.05	4.35	4.20	5.55	5.40
6.....	16.00	15.62½	50.12½	4.35	4.20	5.55	5.40

Copper is firm at higher quotations. Tin has been more active and prices have advanced. Lead has been reduced. Spelter is dull and a trifle lower. Antimony continues inactive, despite pressure to sell.

### New York

**Copper.**—The bad outlook created by the state of the Balkan situation in the latter part of last week unsettled the market, which explains the drop in the price of electrolytic at that time. On Monday, when affairs in southeastern Europe became less threatening, foreign buying started and sales were made involving a fair quantity of copper on a basis of 15.62½c. cash, New York. American buyers also entered the market at this time, although not to any great extent. The activity prevailed both Monday and Tuesday and left the market in a firm condition. At the present time little or nothing is heard of resale lots with their usual concessions. Throughout the decline in electrolytic, Lake more than held its own because of its scarcity, heretofore alluded to, and because of the Michigan copper district still being menaced by labor troubles. Electrolytic copper is quoted to-day at 15.62½c., cash, New York, and Lake is nominal at 16c., and it is said that some consumers would undoubtedly pay more. London quotations to-day are £69 7s. 6d. for spot and £69 3s. 9d. for futures. Exports this month amount to 8041 tons. The Copper Producers' report for April will appear to-morrow.

**Copper Averages.**—The Waterbury average for April was 15.75c. The average New York price for Lake, based on daily quotations in *The Iron Age*, was 15.67c., and for electrolytic, 15.48c.

**Pig Tin.**—In the last week there has been a little more activity. Like copper, tin felt the effects of the new turn political conditions had taken in the Balkan states and the metal sold still lower below the import cost. Early this week there was a recovery. May 2 tin was sold at 49.40c. and some sales were made at 49.50c., but they did not involve a heavy tonnage and there appeared to be more anxiety to sell than to buy. On Monday, with the better feeling abroad, a buying movement started which lasted into Tuesday. On these days certain interests bought up all the cheap lots they could find and this activity worked prices back to within one-half cent of the import cost. Previously prices had been over 1c. below that cost. This buying was explained on the ground that the surplus in the United States is being absorbed, while there is no excessive quantity afloat. It is expected that the metal will soon

be selling on an import cost basis and that the next good buying movement will be for July and August tin, and more particularly for the latter. The price quoted to-day is 50.12½c. in New York. In London £230 is asked for spot and £225 for futures. The arrivals this month total 1217 tons and there is afloat 1350 tons.

**Lead.**—On Monday the American Smelting & Refining Company reduced its price from 4.50c., New York, to 4.35c., at which figure it had stood for many weeks until recently. The only explanation for the decline is that demand slackened up with the higher quotation. The St. Louis price is 4.20c.

**Spelter.**—This metal is extremely dull and with no business in sight. It is quoted at 5.55c., New York, and 5.40c., St. Louis, although in the West it is said that spelter can be had as low as 5.37½c. for some grades.

**Antimony.**—The market for this metal continues soft and the anxiety to sell on the part of some holders is as keen as ever, but takers are lacking. Hallett's is quoted at 8.12½c. to 8.25c., Cookson's at 8.75c. to 9c. and Chinese and Hungarian grades at 7.50c. to 7.62½c.

**Old Metals.**—The demand is fair. Dealers' selling prices are as follows:

	Cents per lb.
Copper, heavy and crucible.....	15.00 to 15.25
Copper, heavy and wire.....	14.75 to 15.00
Copper, light and bottoms.....	13.25 to 13.50
Brass, heavy.....	9.75 to 10.00
Brass, light.....	8.25 to 8.50
Heavy machine composition.....	13.75 to 14.00
Clean brass turnings.....	9.00 to 9.25
Composition turnings.....	11.50 to 12.50
Lead, heavy.....	4.25
Lead, tin.....	4.00
Zinc, scrap.....	4.50

### Chicago

MAY 6.—Metal purchases the past week ran into an aggregate of fair proportions. Our copper quotations represent minimum quotations, with prices fractionally higher not uncommon. A net advance in tin values was also recorded. Spelter quotations show a wide variation and additional softness. We quote as follows: Casting copper, 15.50c.; Lake, 15.75c., in carloads for prompt shipment; small lots, ¼c. to ½c. higher; pig tin, carloads, 51c., small lots, 53c.; lead, desilverized, 4.50c. to 4.55c.; corroding, 4.75c. to 4.80c. for 50-ton lots; in carloads, 2½c. per 100 lb. higher; spelter, 5.50c. to 5.60c.; Cookson's antimony, 10.50c., and other grades, 9.75c., in small lots; sheet zinc is \$7.75, f.o.b. La Salle or Peru, Ill., less 8 per cent. discount in carloads of 600-lb. casks. On old metals we quote buying prices for less than carload lots: Copper wire, crucible shapes, 13.75c.; copper bottoms, 12.50c.; copper clips, 13.25c.; red brass, 12.75c.; yellow brass, 9.50c.; lead pipe, 3.90c.; zinc, 4.35c.; pewter, No. 1, 33c.; tinfoil, 38c.; block tin pipe, 44c.

### St. Louis

MAY 5.—The market has been rather quiet. We quote: Lead, 4.37½c. to 4.40c.; spelter, 5.40c. to 5.45c.; tin, 50.15c. to 50.60c.; Lake copper, 16.22½c.; electrolytic copper, 16.10c.; antimony, Cookson's, 9.35c. In the Joplin ore market the week was not productive of much feature, except that the mines in the sheet ground district have about decided to close until zinc ore commands a better price. Zinc blende was firmer, the range for ore on the 60 per cent. metallic content basis being \$40 to \$44 per ton, while the choicest lots brought as high as \$47. Calamine was also firmer at \$20 for the low figure for 40 per cent. ore, and \$25 the top for the choicest. Lead ore was stronger, 80 per cent. selling for \$53.50 to \$54.50. We quote miscellaneous scrap metals as follows: Light brass, 6c.; heavy brass and light copper, 9.50c.; heavy copper and copper wire, 11c.; zinc, 3.50c.; lead, 3.50c.; tea lead, 3c.; pewter, 25c.; tinfoil, 34c.

The Baldwin Locomotive Works, Philadelphia, has received an order for 50 freight locomotives for the Baltimore & Ohio Railroad. This is in addition to 90 engines which the company is now building for the same road. The New York Central has ordered 114 locomotives from the American Locomotive Company.

The Buffalo office of the Harbison-Walker Refractories Company was moved May 1 to 1320 Marine Bank Building from its former location in the Ellicott Square Building.

The 112-in. mill of the Glasgow Iron Company, Pottstown, Pa., has resumed operations after a short idleness for engine repairs.

## Iron and Industrial Stocks

NEW YORK, May 7, 1913.

Stimulated by the better news from Europe, nearly all stocks have shown an advance over prices recently ruling. A notable exception has been the stocks and bonds of the International Steam Pump Company which have declined rapidly because of rumors that a reorganization is impending. The directors of the company have, however, issued a statement of a reassuring character, claiming that recent trade conditions are but temporary and that present earnings are well in excess of all requirements for fixed charges and for dividends on the preferred stocks of subsidiary companies. The range of prices on active iron and industrial stocks from Wednesday of last week to Tuesday of this week has been as follows:

Am. Can, com.....	297½-34½	Pressed Steel, com.	23½-25½
Am. Can, pref.....	91¼-93½	Railway Spring, com.	28-29
Am. Car & Fdy, com.	48-49½	Republic, com.....	22-24½
Am. Car & Fdy, pref.	114-115	Republic, pref.....	82-83
Am. Loco., com.....	32¾-34½	Rumely Co., com.....	23¼-30½
Am. Steel Fdries.,	31-32	Rumely Co., pref.....	52½-61
Bald. Loco., com.....	44¾-45¾	Sloss, com.....	30-32
Bald. Loco., pref.....	104-104½	Sloss, pref.....	88
Beth. Steel, com.....	32¼-34½	Pipe, pref.....	48-49
Beth. Steel, pref.....	69½-71	U. S. Steel, com.....	58¾-61¾
Colorado Fuel.....	31-32¾	U. S. Steel, pref.....	106¼-108½
Deere & Co., pref.....	96¾-97½	Va. I. C. & Coke.....	45-47
Emer-Brant, com.....	32	Westinghouse Elec.	60-62
General Electric.....	137½-139½	Am. Ship, pref.....	100¼-102
Gr. N. Ore Cert.....	31½-32	Chic. Pneu. Tool.....	49-50½
Int. Harv., com.....	104½-105¾	Cambria Steel.....	48½-50
Int. Harv., new.....	100½-104½	Lake Sup. Corp.....	27
Int. Harv., pref.....	112	Pa. Steel, pref.....	67
Int. Harv., pref., new.....	113	Warwick.....	10½-10½
Int. Harv. Corp.....	100¾-104½	Crucible Steel, com.	14-14½
Int. Pump, com.....	6-10	Crucible Steel, pref.	88-89½
Int. Pump, pref.....	28-35	Harb. Wk. Ref., com.....	45
Nat. En. & St., com.....	13	La Belle Iron, com.	45¼-45½

### Dividends Declared

The International Harvester Company of New Jersey, regular quarterly, 1¾ per cent. on the preferred stock, payable June 2.

The American Steel Foundries, regular quarterly, ½ of 1 per cent. payable June 30.

The Inland Steel Company, regular quarterly, 1¾ per cent., payable June 2.

The International Harvester Corporation, regular quarterly, 1¾ per cent. on the preferred stock, payable June 2.

The American Radiator Company, regular quarterly, 1¾ per cent. on the preferred stock, payable May 15, and 2 per cent. on the common stock, payable June 30.

The International Harvester Corporation, initial quarterly payment, 1¾ per cent. on the preferred stock, payable June 2.

The Eastern Steel Company has declared the second regular dividend of 1¾ per cent. on the first preferred stock. The initial dividend was paid in April. The directors have decided to make dividends hereafter payable in March, June, September and December.

The United States Metal Products Company regular quarterly, 1¾ per cent. on the preferred stock, payable May 10.

### Personal

A. T. Enlow has resigned as general manager of sales of the Stark Rolling Mill Company, Canton, Ohio, to become associated as partner with the Pedlar People, Oshawa, Ontario, on May 15. Mr. Enlow started in the sheet industry with the Aetna Standard Iron & Steel Company, Bridgeport, Ohio, in the early eighteen-nineties. He was manager of the Guernsey works of the American Sheet & Tin Plate Company and in 1904 became sales manager of the Berger Mfg. Company at Canton, going with the Stark Rolling Mill Company in 1910. The Pedlar People are large sheet metal factors with a number of branches in Canada.

E. Koerting, general director of Schutte & Koerting, Philadelphia, Pa., sailed for Europe April 30.

C. H. Alvord, of the Hendey Machine Company, Torrington, Conn., sailed for Europe recently.

W. B. Dickson, formerly vice-president of the United States Steel Corporation, resigned as president of the International Steam Pump Company at a meeting of the directors held last week. His intention is to give all his time to his personal interests. Mr. Dickson became president of the company some months ago, succeeding Benjamin Guggenheimer.

Frank Salomon, Otto Gas Engine Works, Philadelphia, sailed for Europe last week.

The Ingersoll-Rand Company, at its annual meeting April 29, elected President W. L. Saunders chairman of directors, a new position. George Doubleday, formerly first vice-president, was elected president. W. R. Grace was made first vice-president and treasurer. George R. Elder was re-elected vice-president and J. P. Grace and Henry Lang were made vice-presidents. F. A. Brainerd was re-elected secretary.

E. Weise, of Weise & Monski, Halle, Germany, who is touring the world, is now in the United States and while here will visit a number of manufacturing plants. He is staying at the Waldorf-Astoria, New York.

C. K. McAlpine, advertising manager of the Ernst Wiener Company, New York, received injuries in a recent accident which will keep him from his desk for a few weeks.

Clarence S. Funk, general manager of the International Harvester Company, it is understood, has been tendered the presidency of the M. Rumely Company, LaPorte, Ind. His services have been sought to bring about the rehabilitation of the company, and it is stated that his acceptance is conditional upon certain stipulations as to policy and financing, which it is expected will be met.

Dr. E. Karcher, of Fr. Karcher & Co., Beckingen, Germany, is on a visit to this country. He is staying at the Hotel Prince George, New York.

George W. Craven, who has been Chicago manager of the C. & C. Electric & Mfg. Company, has been appointed manager of the company's welding department, Garwood, N. J.

E. A. Kebler has returned to his old connection with Matthew Addy & Co., Cincinnati, Ohio. After leaving that firm several years ago he represented M. A. Hanna & Co. for a considerable time at Pittsburgh, and for the past year has been general manager of sales of the Massillon Iron & Steel Company.

A. J. Chinn, formerly resident engineer of the Buffalo Forge Company, Cincinnati, Ohio, has joined the sales force of the Cincinnati Shaper Company.

George R. Lyman has been appointed district sales manager of the Taylor-Wharton Iron & Steel Company and sales agent of William Wharton, Jr. & Co., Inc., with offices in the Fort Dearborn Building, Chicago, Ill. His territory embraces many Western and some Southern States. He was for a number of years one of the traveling representatives of William Wharton, Jr. & Co., Inc., Philadelphia, Pa., now owned and controlled by the Taylor-Wharton Iron & Steel Company.

Dr. Karl Haerle, of Thyssen & Co., Mulheim, Germany, sailed for Europe April 30.

William Wenske, director of Automobilfabrik Adam Opel, Russelheim, Germany, sailed April 30 on his return home.

E. P. Laughrey, for some years chief clerk at the Scottsdale furnace of Corrigan, McKinney & Co., Scottsdale, Pa., has been made general superintendent, succeeding W. H. Everhart, removed to Cleveland. Robert Leitch, formerly chemist at the Scottsdale furnace, has been made general superintendent of the blast furnace of Corrigan, McKinney & Co., at Charlotte, N. Y.

On Tuesday evening, June 3, Kenneth Seaver, chief engineer of the Harbison-Walker Refractories Company, Pittsburgh, will read a paper on "Refractory Materials" before the mechanical section of the Engineers' Society of Western Pennsylvania.

At a recent meeting of the stockholders of the Fulton Machine & Forging Company, Canal Fulton, Ohio, officers were elected as follows: President, C. A. Irwin; vice-president, J. E. Finefrock; secretary and treasurer, W. C. Laiblin; sales manager, W. E. Young. These officers and William Stuart, M. I. Stock and H. S. Pownell comprise the board of directors.

Announcement is made in connection with the sale of the Fore River Shipbuilding Company, Quincy, Mass., to the Bethlehem Steel Corporation, that Rear Admiral Francis T. Bowles, retired, will remain as head of the business. The corporation will be reorganized and will be a Bethlehem subsidiary, with Admiral Bowles as its president.

## Obituary

### Henry Grey

Henry Grey, well known as the inventor of the Grey mill for rolling structural shapes, died at his home in East Orange, N. J., May 4. He was born in London, England, on January 1, 1849. Coming to the United States in 1879 he found employment in the iron industry, and for a number of years was connected with steel companies in the capacity of superintendent and manager. He had a part in a structural steel mill enterprise at Duluth, and for a number of years was connected with the Cleveland Rolling Mill Company. He spent several years in the de-



HENRY GREY

velopment of a new method of producing structural shapes and perfected a mill for rolling them. The first company to take up the process was the Differdingen Iron & Steel Works, Differdingen, Germany, a mill being built at this plant in 1902. Its construction is somewhat similar to that of a universal plate mill with separate sets of horizontal and vertical rolls. These sets of rolls form the web and flanges of the beam by combined rolling mill operations acting at right angles. The advantage of the Grey method is that the sections can be designed to give economical distribution of the metal, larger beams are rolled and the flanges are made much wider than is possible to produce in the usual beam mill. In 1907 the Bethlehem Steel Company installed a Grey mill at its Saucon plant at South Bethlehem, Pa., Henry Grey & Son being the engineers. The plant differed from that at Differdingen in that the latter finished beams from blooms in a single Grey mill, while at Bethlehem two mills were installed, one for roughing and the other for finishing.

For the installation of the special plant at Differdingen Mr. Grey was awarded a gold medal in 1904 by the Société d'Encouragement pour l'Industrie Nationale, of France, an honor conferred on but few representatives of the United States. Mr. Grey retired from active business about three years ago.

BENJAMIN ROMAINE WESTERN, president and treasurer of the Manufacturers' Publicity Corporation, 30 Church street, New York, died May 1, at his home in Flatbush, Brooklyn, N. Y., aged 73 years. He was a journalist for many years before he entered the advertising field. He was the original proprietor of the Engineering and Mining Journal, which at that time was known as the American Journal of Mining; also editor and proprietor of the Manufacturer and Builder and of the Coal and Iron Record, all of New York. In 1879 he established the Manufacturers' Advertising Bureau, which soon became a leading user of space in trade and technical papers, and Mr. Western grew to be an acknowledged authority in this line of busi-

ness. In 1909 the Manufacturers' Advertising Bureau was combined with the Banning Company, forming the Manufacturers' Publicity Corporation. He was a member of many organizations, including associations of the older residents of New York and Brooklyn.

GEORGE BEARD died April 20 at his home in Glasgow, Scotland, aged 83 years. He was a director of Smith & McLean, Ltd., manufacturers of sheets. He was brought up in the English iron trade and went from Birmingham to Glasgow 31 years ago to manage a sheet mill, which greatly prospered under his direction. He was an authority on questions affecting the iron trade of his district and took a prominent part in the formation of the West of Scotland Iron and Steel Institute, of which he was at one time president. He was active in movements affecting wage settlements as well as matters of wider public interest. He was a frequent visitor to the United States, where he had numerous friends in the iron and steel business. Two of his sons are in this country, namely, Ambrose Beard, sales manager of the West Penn Steel Company, Brackenridge, Pa., who arrived at Glasgow a few hours after his father's death, and Thomas Beard, assistant manager of the Lake Erie Iron Company, Cleveland, Ohio. He leaves six sons and two daughters.

OLIN SCOTT, Bennington, Vt., died April 28, aged 81 years. He was proprietor of the Bennington Machine Works, making a specialty of powder mill machinery, and doing a world-wide business. He established his first powder mill at Marquette, Mich., in 1869. He was for a time actively interested in the conduct of the Du Pont business as a builder of mills and gunpowder expert.

DANIEL SIMONDS, president Simonds Mfg. Company, Fitchburg, Mass., died May 4 at his summer home at Larchmont, N. Y., aged 65 years. He was born in Fitchburg. After leaving school he went to work for his father making scythes and edge tools. In 1868, when the Simonds Mfg. Company was incorporated, he entered its employ and held various offices as the business grew, becoming superintendent and then vice-president, and in 1888 succeeded George F. Simonds as president. Under his management the business of the company grew rapidly. Plants were installed in Chicago, Montreal and at Lockport, N. Y. The Canadian business is conducted under the name of Simonds Canadian Saw Company. Under the direction of Mr. Simonds the company has always been most liberal to its employees and has several organizations which have been of great benefit to them. He was the father of the co-operative industrial system of education at the high school which has widely advertised Fitchburg throughout the country. He leaves a widow and three sons, namely, Alvin T., Gifford K. and Harlan K. Simonds.

SAMUEL L. MOYER, first vice-president and general manager of the Lunkenheimer Company, Cincinnati, Ohio, died May 3, after a brief illness, at his home in that city, aged 39 years. He had been connected with the company for a period of nearly 23 years, and through his untiring energy and marked ability worked his way up to the position he occupied at the time of his death. As a public citizen he served two terms in the Cincinnati City Council, and was prominently mentioned as a candidate for mayor at the next election. Although a generous contributor to charitable institutions for many years, his work in this line was done so quietly that few have realized its magnitude. He was a prominent member of the Cincinnati Business Men's Club, National Metal Trades Association, Queen City Club, Cuvier Press Club, Blaine Club, Laughery Club, etc. He leaves a widow.

JOHN H. HOWARD, of Howard Bros. Boiler Works, Buffalo, N. Y., died suddenly of heart disease May 1, aged 54 years. He had been connected with the boiler making business for 38 years. He was the senior member of the company, which makes a specialty of marine work.

ADOLPHUS BONZANO, a widely known engineer, died at his home in Philadelphia, May 5, aged 83 years. He was one of the organizers of the Phoenix Bridge Company, and was vice-president until 1893, when he retired to perfect some of his inventions.

RAYMOND HARRY MITCHELL, president Sanitary Company of America, L'Anfield, Montgomery County, Pa., died May 4.



## Pittsburgh and Vicinity Business Notes

Machinery Hall, to contain the electrical and mechanical engineering departments of the Carnegie School of Technology at Pittsburgh, is nearing completion and is expected to be ready for occupancy when the fall term opens in September. Counting the tower, the structure will be 160 ft. high and consists of three stories, having a ground plan of 200 x 210 ft. The building will have a floor space of more than 10,000 sq. ft.

The monthly meeting of the Pittsburgh Foundrymen's Association will be held in the Fort Pitt Hotel, Pittsburgh, Monday evening, May 12. W. W. Sanderson, of the Carborundum Company, Niagara Falls, N. Y., is expected to present a paper on "The Manufacture, Uses and Safeguarding of Grinding Wheels," illustrated by stereopticon views.

The Latrobe Hardware Mfg. Company, Latrobe, Pa., has made plans for a material enlargement to its plant.

The Pittsburgh Wire Company, Ferguson Building, Pittsburgh, has secured a site at Mars, Pa., on which it will build a plant for making wire specialties.

A new annealing plant is being installed in the Farrell works of the American Sheet & Tin Plate Company, at Farrell, Pa., on the ground formerly occupied by the Bray continuous mill, which has been dismantled. Five additional hot sheet mills will also be installed in this works for the rolling of high grade sheets for automobile and metallic furniture purposes. Fully \$500,000 is to be spent in these improvements and additions.

It is now stated that one of the two blast furnaces the Pittsburgh Steel Company is building at Monessen, Pa., will not be ready for operation until late in June or early in July and that the second will probably be started about a month later.

The Hooven, Owen, Rentschler Company, Hamilton, Ohio, builder of the Hamilton-Corliss engine, with offices in the Oliver Building, Pittsburgh, has installed at the McCutcheon works of the Carnegie Steel Company, Pittsburgh, a 28 and 52 x 48 in. tandem compound condensing engine to operate a new 6-in. mill; also a 36 x 60 in. non-condensing engine to operate a sheetmill in the plant of the Superior Steel Company, Carnegie, Pa.

W. W. Shilling, president Sharon Boiler Works, Sharon, Pa., for which a receiver was recently appointed, states that the receiver will fill the contracts on hand and then sell the plant. It is the desire to close up the business, as there has been a disagreement among the stockholders.

The annual convention of the Amalgamated Association of Iron, Steel and Tin Workers met in Fort Wayne, Ind., on Tuesday, May 6. Wage committees have been appointed but nothing has been given out as to what demands will be made by the association in its wage scales for the bar-iron mills, effective from July 1.

The report that the Republic Iron & Steel Company, Youngstown, Ohio, will abandon the 18-in. mill in its Mahoning Valley works is incorrect. The future operation of this plant depends largely upon business conditions. Construction work is progressing actively on the 70 by-product coke ovens and they are expected to be in operation about January 1. Two new open-hearth furnaces, whose completion was delayed somewhat by the recent flood, are expected to be ready about August 1.

On Monday, May 5, the plant of the Franklin Steel Company at Franklin, Pa., was badly damaged by fire, the 9 and 12-in. bar mills and the power plant being totally destroyed, but the 18-in. mill and the assembly rooms were saved. The loss is estimated at \$200,000. The plant will be rebuilt at once.

The Jones & Laughlin Steel Company recently purchased about 5 acres adjoining its fabricating shops in the Soho district, Pittsburgh, comprising the old plant of the Keystone Rolling Mill Company. The equipment will likely be sold and the buildings torn down. The ground will be held for future extensions.

The Pennsylvania Engineering Works, New Castle, Pa., is building two 20-ton converters and one 800-ton metal mixer for the Pennsylvania Steel Company at Steelton, Pa., to be installed in the open-hearth steel plant in which the duplex system will be used.

The Riter-Conley Mfg. Company, Pittsburgh, has received a contract for an extension to the Conway shops of the Pennsylvania Lines West, taking about 300 tons of steel, and also a contract for the building of 17 110-ton

steel ladles for the new open-hearth plant of the Carnegie Steel Company at Bessemer, Pa. These are said to be the largest steel ladles so far built. The company will soon start work on 29 dam gates for the Kuhn interests at the Cheat River power station in West Virginia.

E. P. Williams, of the Baldwin Locomotive Works, Philadelphia, is in the West taking bids on the foundations and track layout for the new locomotive plant at East Chicago, Ind. It is the intention of the company to put in the foundations for an erecting and machine shop, 560 x 1140 ft., during the coming summer. Plans for the superstructure of the building are under consideration, but the contract will not be awarded until later in the year.

The Inland Hardware Company, Wichita Falls, Texas, has been organized for the purpose of jobbing heavy hardware, including stoves, vehicles, wire and nails, flat sheets, plumbing goods, blacksmiths' supplies, etc. The company is erecting its own trackage property and expects to be filling orders within 30 days. R. G. Scheurer, E. B. Stevens, W. H. Swearingen and Horace Nutt are the principal owners.

The hearing in the Steel Corporation dissolution suit will be resumed Monday, May 12, in the large room of the Steel Corporation on the twentieth floor of 71 Broadway, New York. It is expected that Chairman Gary or President Farrell will be first on the stand in the presentation of the case of the defense.

Westinghouse, Church, Kerr & Co. removed May 1 to their new offices at 37 Wall street, New York. The Electric Properties Company also removed on that date to the same address. John F. Wallace, president of the two companies, announces that his personal address is now 37 Wall street.

Stockholders of the Youngstown Sheet & Tube Company have approved the proposed increase in capital stock from \$10,000,000 to \$20,000,000. The directors of the company are authorized to declare a stock dividend of not over 50 per cent. of the increase in the common stock.

The Colorado Fuel & Iron Company, in consideration of the dismissal of a suit involving 5800 acres of coal land owned by the company, surrendered to the United States Government nearly 3500 acres in southern Colorado valued at \$1,000,000.

The Nelson Valve Company, Chestnut Hill, Philadelphia, Pa., has established a branch office at 415 San Pedro street, Los Angeles, Cal., where the W. H. Gilbert Sales Company will act as direct representative for the State of California.

Labor troubles have interrupted operations at the Burlington, N. J., plant of the United States Cast Iron Pipe & Foundry Company. The plant of the Thomas Devlin Mfg. Company, also at Burlington, has likewise been affected.

The Thomas Iron Company blew out its No. 3 furnace at Hokendaqua, Pa., May 2. It now has one stack blowing at Hokendaqua, one at Alburtis and one at Hellertown.

The Iron Gate furnace of the Alleghany Ore & Iron Company, Iron Gate, Va., was blown in last week after a short period of idleness for repairs.

The Parkersburg Iron & Steel Company, Parkersburg, W. Va., resumed operations with a full force on Monday, May 5. Its plant had been closed by the flood.

The Siemund & Wenzel Electric Welding Company has moved its general offices from 29 Broadway to 30 Church street, New York.

### Miscellaneous Steel Cutting by Gas in the Navy

An idea of the extent to which cutting of steel by the gas torch is practiced in the United States Navy is obtained in the following information supplied by J. F. Springer, New York:

A concrete illustration of the applicability of gas methods of cutting steel is afforded by the experience gained when the great pontoon crane Hercules suffered a severe accident several years ago in the Brooklyn Navy Yard. The crane is essentially a steel barge, from each corner of which a lattice steel column extends upward, the entire complement of four supporting a horizontal crane bridge about 200 ft. long and of 125 tons capacity. In addition there are four heavy diagonal sway braces of lattice construction. As the bottom of the bridge is about 60 ft. above the deck, it will be seen that the lattice-like struts have considerable lengths. During a storm the structure was wrenched away from a vessel then at the yard and capsized alongside a sea wall, with the result that the struts were ruinously bent, some of them being bent over four 8-in. guns resting on the dock. The result was a tangled mass of steel. The oxy-acetylene torch was then brought into use, in fact, within twenty minutes after the accident occurred, and, it is figured, saved a possible loss of many thousand dollars.

Another opportunity for gas cutting to prove its worth occurred not so long ago. The Fall River Line steamer Commonwealth in a fog ran into the New Hampshire while the latter was at anchor at Newport, R. I. The light steel plates of the sides above deck were smashed in for 20 or 30 ft. The result was a mass of distorted steel. Here, again, the oxy-acetylene torch cut the wreckage adrift. Chipping with air hammers, it is calculated, would probably have taken two weeks, while a few days sufficed with the gas torch.

Some time ago it was desired to cut through the old rudder stock of the Culgoa, a merchant vessel outfitted by the Government for refrigerator service. The material here was probably a very mild steel. This heavy piece, 8½ in. in diameter, was cut horizontally while standing in its normal vertical position. The metal cut quite freely, so that neither its size, position nor low-carbon content operated to make the job a difficult one.

There is so much cutting to be done at the Brooklyn Navy Yard that the Government has installed an extensive plant for the manufacture of oxygen. On the second floor of a room of perhaps 80x20 ft. are located 50 cells manufactured by the International Oxygen Company, New York City. These are arranged in two double rows with an aisle between. The arrangement of the individual cells in a double row is a staggered one. The compactness is such that more cells could be installed without undue crowding. The method of generation is by means of the electrolytic decomposition of water into its constituent gases, oxygen and hydrogen. These two gases are generated in separate compartments in the cells from which they pass to the respective oxygen and hydrogen off-take pipe lines to gas holders, located on the ground floor beneath. The capacity of the holders is about 300 cu. ft. each. The 50-cell plant has a rated capacity of 3600 cu. ft. of oxygen at atmospheric pressure. Simultaneously, double the quantity of hydrogen is produced. The hydrogen is at present being allowed to escape in the Brooklyn plant, as arrangements have not as yet been made to take care of the gas. Despite the loss of the hydrogen, the oxygen is manufactured at a very reasonable rate, as it is stated that the cost of 11.2 cu. ft. is as low as 7 cents. The utilization of the hydrogen in connection with cutting will reduce the amount of acetylene gas now required.

Three men suffice to give attendance upon the entire plant, including the acetylene division. In fact, two men are equal to the work of a single shift. The third man is required sometimes at night, when he works alone. In order to keep him in practice, he is kept on with the day shift when night operation is suspended. Of course, the labor expense for all three must be counted whether the yard makes much or little gas. Included in the work of these men is attendance on the gas compressors and the moving of the cylinders which are to be shipped to the Philadelphia yard or any other point in the New York yard.

Altogether there are three compressors. One com-

presses acetylene gas into cylinders at 150 lb.; the two others compress oxygen into cylinders at 300 and 1800 lb. All compressors are of the three-stage type. Hydrogen compression could, of course, be carried on simultaneously. At Brooklyn the chief application of the oxy-acetylene process is cutting. Welding is done, but the present application of it in navy work is not nearly so extensive as that of cutting.

### Book Reviews

**Engineering as a Vocation.** By Ernest McCullough, C. E. Pages 201, 5½ x 8 in. Published by the David Williams Company, New York. Price \$1.

Mr. McCullough's book, which was brought out by the publishers of *The Iron Age*, has generally been received by reviewers in words of unqualified approval, and the belief that there is a demand for a work of the kind has been abundantly justified. It has remained, however, for something to be said of the book in these columns, and while the title is self sufficient in indicating that it attempts to answer the question which is presented to the young man or to his parents in their efforts to decide on a career, a brief reference to the work may here be made.

The book in a word contains a wealth of sound advice that is the result of the experiences of an engineer who has watched the progress of other engineers. It aims to tell the truth about engineering as a vocation, and any confusion which may exist in one's mind as to the meaning of the term "engineer" is dispelled by the first chapter. Besides being of value to parents who would direct their sons, it is not without its helpfulness to the teacher in the technical school or college who, easily liable to slide into a rut, may find his own progress checked or his expected ability to guide students very much diminished. The high school pupil in this connection will find what he may expect in the matter of subjects to be studied when he attends the so-called technical college. The author admits that such a student is likely to believe that the studies are unnecessary to his success as an engineer, but the uninitiated does not, of course, as repeated experiences prove, realize the underlying broadening effect of the seemingly useless subjects.

Those already in the profession will find the book not only interesting but illuminating. For example, "How to Hunt and Hold a Job" is the heading of one chapter that will surely appeal to a large audience.

**Analysis of Metallurgical and Engineering Materials.**

By Henry Wysor, B. S. Cloth; 82 pages, illustrated, 8½ x 10½ in. Published by the Chemical Publishing Company, Easton, Pa. Price \$2.

Many books have been published intended for students' use in chemical and metallurgical laboratories, but this book is somewhat out of the ordinary style. Its size is the first departure and one which does not detract from its appearance or ease in handling. In an introductory chapter are given the principles and precautions on which are based successful and careful analytical work, directly representing the accepted practice of the chemical profession. Therefore the book is as useful to beginners in quantitative analysis as to advanced workers.

The method of performing the work is the chief plan, without any thought given to the chemical or theoretical scheme. The student is taught the principles by doing the experiment, with the idea that further study will be required by frequent recitations. If the student wishes to make a memorandum of calculations, formulas, different methods used or any matter relative to the work being performed, he can do so on blanks inserted for the purpose opposite each page of the text. The illustrations are very clearly drawn line cuts, which help the student to a quick understanding of the apparatus being used.

Two very interesting chapters at the end of the book have been devoted to the examination of the microstructure of iron and steel, and to the heat treatment of metals. A very complete bibliography to original articles and to chemical literature has been included in the work and should be of use to the student who wishes to combine reading with his laboratory work and study. In conclusion it might be said that the work succeeds in its purpose: to supply practical methods for analysis of such materials as are commonly brought to the attention of chemists in the field of metallurgical and engineering chemistry.

# The Machinery Markets

Some machinery markets report a fair amount of activity, but conditions tending toward quiet are apparent in most cities. Nearly everywhere plants are busy on orders in hand despite a lessened amount of new business. The New York market is quiet and there is a dearth of news. In New England there has been little change and in some directions orders are being received in good volume. Current business continues light in Philadelphia. In Detroit there has been a call for the heavier types of automobile making machinery; there is considerable inquiry and the week has shown an improvement. In Cleveland trade is light and of the single tool order, but there is considerable business in sight. In this city expenditures for repairs of flood damages are credited with curtailing the buying of shop equipment by railroads. In Cincinnati also, new business is of the single unit variety, but manufacturers are operating on full time and in some cases with night shifts. Inquiry is scattered but of excellent volume in Chicago, where second-hand tools are finding a ready market and improvements to railroad terminals are expected to produce business. The prospects are that May will prove a good month in Milwaukee, although small orders predominate. In the Central South business has improved, with a good demand for electrical equipment ice machinery and boilers. There have been no large transactions in St. Louis, but there has been a good volume of miscellaneous orders. The prospects are for a busy summer in Texas and an unusually strong demand is developing for cotton gins and cotton seed oil machinery. On the Pacific coast a few satisfactory orders have been placed and contractors' equipment is in good demand, but as a whole business is quiet.

## New York

NEW YORK, May 7, 1913.

Of the representatives of the machinery trade who were approached for information a majority declared with more or less emphasis that local conditions are quiet. A few, on the other hand, had found a fair volume of business and all were basing much hope on known prospects. The Pennsylvania Railroad has placed more orders against its recent inquiries, and the Buffalo, Rochester & Pittsburgh Railway has been in the market for a few machines. A small amount of buying has been done for the Watervliet Arsenal.

The New York and New Jersey branch of the National Metal Trades Association reports that on May 1 all the branch shops were free from labor disturbances. The ship carpenters of marine plants, not members of the association, in Jersey City, are on strike for an increase in wages, but the ship carpenters employed in Jersey City marine plants which are members of the association refused to strike. The machinists employed by the Yellow Taxicab Company of New York City are on strike. The steel casting chippers at the R. Hoe Company plant are on strike.

Adriance, Platt & Co., Poughkeepsie, N. Y., have begun the foundations for two buildings, one 100 x 150 ft., two stories, to be used for a warehouse, and the other 80 x 176 ft., four stories, which will be used for wood-working, tool department and machinery assembling department.

The Leroy Hydraulic Electric Company, Leroy, N. Y., which has been making extensive improvements to its large power plant, will erect a three-story fire-proof storehouse and office building on Mill street in that village.

The Johnston Harvester Company, Batavia, N. Y., has commenced work upon an extensive addition to be made to its malleable iron department plant on Harvester avenue.

Work is to be commenced at once upon the extensive plant to be built by the Medina Iron & Brass Company at Medina, N. Y.

An electric power plant which will develop 4000 hp. is to be constructed by a recently organized company, of which M. S. Wilder, Harry Wilder and B. R. Clark of Watertown, N. Y., are the directors. Contract for the construction work has been let to Eaton & Brownell, Watertown, and will include a concrete dam, a penstock 3000 ft. in length and 7 ft. in diameter leading from the dam to the power house, and a power house to contain modern generating equipment. The new company will sell power for commercial purposes and has already arranged to furnish power for the operation of the plant of the Malone Paper Company.

A foundry plant is to be built at once by the Oswego Machine Works, Oswego, N. Y., on the site which it recently purchased on West Second street.

A large addition is being made to the plant of the Stuhlmiller Mantel Works at East Delavan avenue and the New York Central Railroad belt line, Buffalo. Con-

siderable new machinery and equipment will be installed.

The Albert Dickinson Company of Chicago has established a branch at Buffalo and will at once erect an extensive seed cleaning plant with large elevator, warehouse and office building on the Buffalo River and Ganson street, with Buffalo Creek Terminal Railroad connections. The site upon which the plant will be located is 235 x 554 ft.

The J. F. Smith Paper Box Company, Buffalo, has been incorporated with a capital stock of \$200,000. The Horton Box Company's factory, Exchange street, near Washington street, will be taken over and operated by the new company. Additional new and special machinery for the manufacture of paper boxes will be installed. Jacob F. Smith, James C. Beecher, W. J. Heinold, H. T. Shawl and Frederick L. Pierson are the directors.

Fire last week originating in the cupola building of the copper smelting plant of the Buffalo Smelting Works, foot of Austin street, Buffalo, damaged the plant to the extent of \$50,000.

The Cyphers Incubator Company, Buffalo, N. Y., has awarded the general contract for the construction of four reinforced concrete buildings to the Turner Construction Company, 11 Broadway, New York. The buildings will be 146 x 401 ft., 80 x 97 ft., 122 x 301 ft. and 50 x 146 ft., all one story, sawtooth roof, with the exception of the power house, which is to be two stories.

The Art Silk Yarn Company, Kingston, N. Y., B. W. Wilkins, president, 38 East Twenty-fifth street, New York, is ready for bids for the construction of 17 one-story factory buildings which will occupy an area of 225 x 338 ft. Plans were prepared by Frederick W. Fischer, architect, 32 Union square, New York.

The Manhattan Rug Company, Saratoga, N. Y., has been incorporated to manufacture rugs and textile fabrics. H. J., J. P. and E. Dennin are the incorporators.

Plans for the sewage disposal plant at Yonkers, N. Y., to be built by the Bronx Valley Sewer Commission, White Plains, N. Y., have been completed by Charles A. Holmes, architect, 103 Park avenue, New York and bids will soon be asked for. The plant will be comprised of five buildings, including a machine building, transformer house, detritus building and two gatehouses, all to be one-story. The estimated cost is \$100,000.

The Corning Glass Works, Corning, N. Y., will commence work at once on an addition to its glass plant. G. B. Hollister is manager.

The Clark Textile Company, Saratoga Springs, N. Y., has begun construction work on an additional factory building.

The Norton Emery Wheel Company, Niagara Falls, N. Y., has let contract for four additional buildings.

The extensive plant of the American Agricultural Chemical Company at Babcock, Lewis and Lyman streets and the Erie Railroad, Buffalo, was seriously damaged by fire May 5, the loss on buildings, machinery and equipment being about \$200,000.



## New England

BOSTON, MASS., May 6, 1913.

The dealers have not had a very brisk week, though business could not be characterized as dull. The machine tool builders report conditions changed but little, the volume of orders depending somewhat upon the class of product. A strong feeling exists that the sooner the tariff question is settled the better it will be for everyone. Naturally in a good many lines the interested persons are not talking optimistically; to do so might have a regrettable influence on Congress. Yet these same men dislike very much having to share in an agitation which might have an influence toward destroying confidence.

Deliveries of machine tools have not changed. Shipments of some sizes and types are as far in the future as they have been. Probably aggregate sales are no less than they have been since business resumed a normal activity. Railroad buying has been and still is an important influence in maintaining the demand. It is a notable fact that few manufacturers are holding back projected additions. In some lines owners are proceeding with some caution, but they are the exceptions. Manufacturers of parts entering into metal goods, including the makers of screw machine and pressed metal products, are very busy. The only list which has come into the market is a short one for the Pittsfield plant of the General Electric Company.

The plans grow apace for the enlargement of the works of the Hendee Mfg. Company, Springfield, Mass., manufacturer of motor cycles. Twice already have the extensions been increased from those of the original announcement, which covered a building in which a complete drop forging plant will be installed, so it is understood. This structure, at East Springfield, will be larger than at first contemplated; the present works in the city will be increased, and moreover a second structure will be erected at East Springfield 184 x 324 ft., one story.

Charles C. Russell and Whitman Russell, Greenfield, Mass., are to establish works in that town for the manufacture of small tools and machinery. It is understood that negotiations are on for the purchase of land on Green River, where works will be located. Both of these gentlemen have had an extensive experience as manufacturers with the Wiley & Russell Mfg. Company, the control of which was owned by their father, Charles P. Russell, until its consolidation as a part of the Greenfield Tap & Die Company a year ago.

The General Electric Company has started work on an addition to its works at Pittsfield, Mass., which will be 65 x 600 ft.

The addition to the works of the Bridgeport Brass Company, Bridgeport, Conn., will be used in increasing the capacity of the company's tube and rod mill for the manufacture of both rods and seamless tubing. The building will be 50 x 360 ft.

The Benedict & Burnham department of the American Brass Company, Waterbury, Conn., has awarded the contract for its additional tube mill, which will be 199 x 224 ft., one story.

The Standard Company, Torrington, Conn., will erect an addition 42 x 144 ft., three stories.

The name of the Bacon & Donovan Engine Company, Springfield, Mass., dealers in engines, mill supplies, etc., will be changed to the Bacon-Farnum Company. The change is the result of the purchase of a share of the business by Marlin D. Farnum, recently with the Chandler & Farquhar Company, Boston, Mass.

The Portland Stove & Foundry Company, Portland, Me., is to build a three-story addition to its works.

The Jaeger Engine Company, Pawtucket, R. I., has moved its business to Taunton, Mass., where it will be carried on in the Mason Machine Works. The company builds gasoline engines.

P. & F. Corbin, New Britain, Conn., is planning to increase its foundry building.

Both the Weed Chain Tire Grip Company and its allied corporation, the American Chain Company, will erect factories at Bridgeport, Conn., on Connecticut avenue in the East Bridgeport section. They will be located side by side and will be of brick, that of the Weed Company being 50 x 150 ft., three stories; that of the American Chain Company 110 x 250 ft., one story.

The Blue Ribbon Auto Company, Bridgeport, Conn., is to erect a plant consisting of two three-story brick buildings, one 52 x 155 ft., the other 56 x 82 ft.

The Wallace Barnes Company, Bristol, Conn., manufacturer of springs, is to erect an additional building, 50 x 120 ft., four stories.

J. B. Tatem & Son, Putnam, Conn., manufacturer of tool handles, is to replace its factory, which was destroyed by fire recently.

The Yale & Towne Mfg. Company, Stamford, Conn., has plans for two additional buildings, one 245 x 296 ft., one and three stories; the other 50 x 200 ft., six stories, both of brick with steel frames, fireproof construction. The buildings will house a brass foundry, pattern shop, core room and a general manufacturing department.

The Sentinel Automatic Gas Appliance Company, New Haven, Conn., has been organized with a Connecticut charter to manufacture automatic soldering furnaces, automatic laundry irons and similar appliances. The business is closely allied with the Over Equipment & Mfg. Company of New Haven, which holds a large majority of the capital stock. Victor M. Tyler is the president, Arthur Vila vice-president, J. E. Wheeler secretary and E. L. Hartpence treasurer.

Additions to general manufacturing plants in New England include the following: Charles W. House & Sons Company, Farmington, Conn., felt manufacturers, additional factory, 65 x 120 ft., three stories; Hart Mfg. Company, Farmington, Conn., two-story office and factory building; Orford Soap Company, South Manchester, Conn., additional factory building, 52 x 123 ft., three stories, with two wings for elevator and stair tower, and addition to pump house; Lumb Knitting Company, Dartington, R. I., addition 100 x 100 ft.

## Philadelphia

PHILADELPHIA, PA., May 6, 1913.

Current orders for machinery and tools continue light and business under negotiation closes slowly. In many instances prospective buyers are marking time, developments in connection with the tariff being a factor. Little business has as yet developed from the recent tool inquiries of the Pennsylvania Railroad. Inquiries involving any considerable tool equipment are very scarce, even small groups are in lighter demand. Several new propositions in connection with power equipment are in sight. Moderate equipment for manufacturing plants is being estimated on and several office building propositions are before the trade. The second-hand machinery market is dull, reflecting the general conditions of the market. Steel casting plants are actively engaged, although here and there easier conditions are noted in connection with the demand for gray iron castings.

The Tindel Morris Company, Eddystone, Pa., has made application for authority to increase its capital stock from \$60,000 to \$1,500,000. The company proposes to materially increase its plant; an open-hearth steel furnace is to be installed as are also two additional large hydraulic presses and necessary heating, annealing and tempering furnaces. These additions when completed will materially increase the company's facilities for forgings covering government, railroad and marine requirements.

Ballenger & Perrot, engineers, will take bids May 8 for the construction of a plant 132 x 246 ft., two stories, to be erected on Haddon avenue, near Whitehorse Pike, for W. T. Wescott, to be used for the manufacture of confectionery. A radial stack 125 ft. high and 48 in. in diameter will be erected. A 150 hp. boiler and necessary power plant, refrigerating machinery and machinery incident to candy manufacture will also be installed.

Henry E. Baton is about to begin work on the construction of a car assembling shop, 24 x 78 ft., for the J. G. Brill Company. The building will be of concrete, brick and steel.

The Commissioners of Public Grounds and Buildings, Harrisburg, Pa., will take proposals until May 13 for furnishing supplies to various departments during the fiscal year ending May 31, 1914. Under schedule D bids are asked for engineering instruments, laboratory and engineering supplies; under schedule K, bids are asked for furnishing heat, light and power station supplies.

Tentative plans for sewage disposal plants for the city of Philadelphia have been practically completed. Plans call for an expenditure of \$30,000,000. District plants will be erected but plans for the machinery to be used have not been worked out, awaiting further inspection by engineers.

The Standard Stoker Company, Wilmington, Del., has been incorporated under the Delaware laws with a capital stock of \$2,700,000 to manufacture, sell and deal in automatic stokers, fuel conveyors, etc. J. P. Laffey, C. R. Mudge and A. M. German are named as the incorporators. Information as to the plans of the company is not available.

E. V. Seeler, architect, is taking bids on plans for a seven-story, 92 x 210 ft., office building, to be erected at Sixth and Walnut streets for the Penn Mutual Life

Insurance Company. The building will be of steel and concrete. Plans include power plant and elevators.

Bids are being taken by the Pennsylvania Railroad for a new physical and chemical laboratory to be erected at its Altoona, Pa., shops.

It is announced that B. T. Brandt has been appointed receiver for the Lancaster Foundry Company, Lancaster, Pa. A. R. Hess was president and J. R. Haldeman, manager of the company.

A. L. Fretz & Son are taking bids from private plans for a power house and other additions for a textile manufacturing concern at Allegheny avenue and C street. The name of owner is withheld.

The garbage disposal plant of the city of Wilmington, Del., was totally destroyed by fire April 27. It will be immediately rebuilt.

## Chicago

CHICAGO, ILL., May 6, 1913.

With the exception of the requirements of the Atchison, Topeka & Santa Fé Railroad represented by a large portion of its recent list still unplaced, there are at the present time no lots of tools of individual prominence in the market. Other inquiry of a general character while of fairly satisfactory volume in the aggregate is scattering. The demand for second hand tools is only fair, but one important dealer who is making attractive prices to move a heavy stock of used machinery is finding a ready market. The decision to proceed with the building of the Western plant of the Baldwin Locomotive Works at Calumet offers promise of an interesting list of machines of highest grade. This is not expected to materialize before the late fall, if at all in the present year. Improvement of terminal facilities by some of the southwestern branch railroad lines will offer a market in the spring months for a limited number of machines. In the Detroit district extensions of capacity in the automobile industry are expected to develop large sales of production machinery in the next few months, particularly of single and multi-spindle automatic screw machines.

The Hugro Mfg. Company, 431 South Dearborn street, Chicago, manufacturer of vacuum cleaners, is having plans prepared for the construction of an additional factory building 106 x 144 ft. at its Warsaw, Ind., plant.

The Wm. Morris & Sons Company, Chicago, sash makers, has taken out a building permit for a small one-story brick addition to its plant.

The Beeler Slide Valve Motor Company, Chicago, has been organized with a capital stock of \$20,000 for the manufacture of motors and machinery by E. B. Beeler, 5247 Prairie avenue, S. B. Hirschl and M. A. Hirschl.

The Benedict Wrench Company, Chicago, has been incorporated with a capital of \$10,000 to engage in the manufacture of tools. The incorporators are Charles E. Freund, 20 East Randolph street; William G. Freund and W. B. Hartman.

The Gasturbine Company, Chicago, has been organized to manufacture gas engines. The charter under which the company is incorporating provides for a capital of \$10,000 and was taken out in the office of William E. Kaiser, attorney, 105 West Monroe street.

The Velie Engineering Company, Moline, Ill., an associated company with the Velie Motor Vehicle Company, has built a new plant to be used for the construction of motor trucks.

The Given-Moore Company, Spring Valley, Ill., whose location at that place was recently noted, will build a new plant to be 72 x 150 ft., which will include a machine and blacksmith shop and woodworking department.

The B. S. Constant Mfg. Company, Bloomington, Ill., builder of elevator and other grain machinery, will be incorporated with a capital stock of \$30,000 to succeed the B. S. Constant Company, a partnership. The company will occupy a two-story building 60 x 150 ft. The officers are D. G. Eickenberry, president; H. B. King, vice-president, and H. E. Surface, secretary and treasurer.

The American Highway Supply Company, Terre Haute, Ind., has filed articles of incorporation providing for a capital stock of \$10,000 for the purpose of manufacturing road building machinery. A. Dale Houff and William A. Braden are two of the organizers of the company.

The Illinois Thresher Company, Sycamore, Ill., has been incorporated with \$200,000 capital stock by William N. Rumely, P. B. McIntyre and George E. Dutton to take over existing plant and to remodel.

The Valley Chemical & Mfg. Company, near Utica, Ill., has let the contract for the building of its new

plant. It is to be of steel and concrete, 80 x 160 ft., the steel to be furnished by the Decatur Bridge Company. F. S. Dodge, secretary and general manager, has supervision of the purchase of new equipment.

The Concrete Engineering Company, Davenport, Ia., has been awarded the contract for the erection of four factory buildings for the Purity Oats Company. The cost is estimated at \$75,000.

The Shotwell-Harris Company, Minneapolis, Minn., is building a mill construction factory building to be 150 x 150 ft., the main portion of which will be occupied by a machine shop. The plant is expected to cost \$40,000.

## Cleveland

CLEVELAND, OHIO, May 6, 1913.

Business with local machinery houses is light, few orders coming out for more than single tools. Considerable business is in prospect but the placing of much of this is being delayed and the feeling is quite general that the trade will experience a quiet summer. The pending tariff legislation appears to be the most important factor in holding back orders. The market is also being considerably affected by the Ohio floods. Since these floods very little business has come from the districts that suffered the most severely. The Marion Steam Shovel Company has purchased close to 25 per cent. of its requirements contained in its recent list of about 70 tools, and it may be some time before the remainder are bought. A large list was expected from the Lake Shore Railroad about May 1 for its new shops in Toledo, but the distribution of this list has been deferred and it may be two months or longer before it is sent to the trade. Some of the Ohio railroads that were expected to buy machinery this spring will not do so as they are using their available funds to repair flood damages. In the foundry trade both the jobbing gray iron and steel foundries are well filled with work but they are not crowded with future orders to the extent that they were a few months ago.

The National Carbon Company, Cleveland, will erect a four-story and basement manufacturing plant in Newark, N. J. The building will be 105 x 200 ft., of steel and concrete construction. Plans have been prepared by the Osborn Engineering Company, Cleveland. The required machinery equipment will be purchased by the Carbon company. It has not yet been decided whether power equipment will be required.

The Chandler Motor Car Company, Cleveland, which is establishing a new plant, will require considerable new machinery, orders for a small portion of which have been placed.

The Lake Shore Railroad is in the market for a wood surfacer for its Toledo car shops.

The Astrup Company, Cleveland, maker of tents and awnings, will shortly begin the erection of a new factory building adjoining its present plant on West Twenty-fifth street. The building will be of brick and concrete, 60 x 125 ft., four stories and basement. Plans are being prepared by the Forest City Engineering Company, Cleveland.

The Whitacre Fireproofing Company, Waynesburg, Ohio, is planning extensive additions to its plant and the installation of considerable new machinery. The company has issued \$250,000 in bonds for that purpose.

Sealed proposals will be received by the Board of Public Affairs, Granville, Ohio, May 23, for the erection of a waterworks pumping station and its equipment. The latter will include a high pressure duplex compound condensing pump, a horizontal return tubular boiler and a steel water tower.

The Suspension Roller Bearings Company, Sandusky, Ohio, which recently increased its capital stock from \$250,000 to \$350,000, made the increase to provide additional working capital and to add to its machinery equipment.

The Elite Mfg. Company, Ashland, Ohio, has awarded a contract for the erection of a new plant addition 56 x 126 ft. It will be of steel and concrete construction.

The village of Montpelier, Ohio, will issue bonds to the amount of \$15,000 for the purpose of enlarging the municipal electric light and waterworks plant.

A special election will be held in Barberton, Ohio, May 20, to vote on a proposed bond issue of \$110,000 for building a new electric light plant and \$25,000 for enlarging the waterworks plant.

The Mathews Boat Company, Port Clinton, Ohio, has decided not to accept a proposition to move to Detroit, Mich., and will build a large addition to its present plant.

The West Steel Castings Company, Cleveland, which has had plans prepared for a three-story plant addition, 60 x 70 ft., advises that it has postponed the project.



A plant for the manufacture of feed cutters will be established in Bellefontaine, Ohio, by Jesse Kauffman. It will be located in the Allie J. Miller body factory.

## Cincinnati

CINCINNATI, OHIO, May 6, 1913.

A number of machine tool builders call attention to the fact that there is a natural falling off in inquiries at the end of the spring season and that the present dull period is only transitory. New business is mostly confined to single tool orders, but there are quite a number of local manufacturers already behind on deliveries who welcome a temporary lull. An indisputable evidence of healthy business conditions in the Central West is the fact that practically every manufacturer is operating on full time and a few of the machine tool shops are running with night shifts.

Conditions with the jobbing foundries are improved, although all of them are not yet operating on full time. Second-hand machinery is moving very slowly.

The Foote Pulley Company, Cincinnati, has been incorporated with \$100,000 capital stock to manufacture a patented pulley and engage in a general foundry and machine business. The incorporators are Paul A. Falbush, James H. Foote, James Rossiter, W. L. Taylor and George W. Spreen. Nothing has been given out as to machinery requirements. The company's plant will be located at 816 East Pearl street.

The Reliance Engineering Company, Cincinnati, has been commissioned to draw up plans for a gas plant to be erected for the municipality of Lebanon, Ohio.

The Industrial Club, of Covington, Ky., held its annual meeting and election May 3. R. C. Stewart, president, Stewart Iron Works Company, was re-elected president, making the third term that he has served. The other officers elected are J. W. Brown, first vice-president; E. H. Croninger, second-vice-president; R. L. Crigler, treasurer; John E. Shepard, secretary, and the following directors: T. W. Spinks and A. R. Miller. The Industrial Club is making a special campaign to induce manufacturers to locate in Covington.

The Ohio Brass Company, Mansfield, Ohio, is making some additional installations in its plant and will probably be in the market later on for a lot of pneumatic tools.

The Consumers' Ice & Cold Storage Company, Lexington, Ky., is enlarging its plant. Practically all equipment has been purchased.

The Central Phosphate Company, Wallace, Ky., whose plant was recently finished, is buying new machinery. An addition to the plant is contemplated, but plans have not yet been made up.

Carl E. Steeb, secretary Board of Trustees, Ohio State University, Columbus, Ohio, will open bids May 12 for furnishing two automatic underfeed stokers and also for a lot of heating and ventilating equipment to be installed in the Botany and Zoology Building.

The Moline Plow Company, Moline, Ill., will open a large branch establishment at Columbus, Ohio. A site has been secured on North Front street, on which will be erected a four-story concrete building 80 x 170 ft. No manufacturing will be done, but considerable equipment, including freight elevators and a heating plant, will be required.

The Superior Gas Engine Company, Springfield, Ohio, will make an addition to its plant that will be 50 x 100 ft., one story, and of regular mill construction.

The Snider Mfg. Company, Logan, Ohio, is buying woodworking machinery and other equipment for a new plant recently constructed.

Thomas J. Nichol & Co., Cincinnati, pipe fitters and brass founders, now located at Pearl and Ludlow streets, have purchased a site at Plum and McFarland streets, on which they intend to erect a large plant. No equipment wants will be available for some time.

The Emery Candle Company, Ivorydale, Ohio, has had plans prepared for an addition to its plant that will be 60 x 80 ft., two stories, and of brick construction.

The Miami Cycle Mfg. Company, Middletown, Ohio, has decided to erect a large branch factory at Indianapolis, Ind. It is stated that the larger part of the necessary machinery has already been contracted for.

Sims & Benzing, Hamilton, Ohio, have been awarded contract for a one-story addition to the plant of the Hamilton Foundry & Machine Company, recently mentioned.

The Evansville Carriage & Woodstock Company, Evansville, Ind., will erect a two-story addition to its manufacturing plant that will be 60 x 160 ft. and of regular mill construction.

The Springfield Light & Power Company, Springfield, Ohio, will add to its power plant equipment, according to present plans under consideration.

## Wheeling

WHEELING, W. VA., May 6, 1913.

The Jefferson Lumber Company, Wellsburg, W. Va., has been incorporated with \$10,000 capital stock, and the following are incorporators: D. A. Burt, E. M. Burt, Wellsburg; A. L. Irwin, J. R. Irwin, Wheeling; Victor Hebron, Steubenville, Ohio.

The C. D. Burns Lumber Company, Martinsburg, W. Va., has been incorporated with a capital stock of \$50,000. C. D. Burns, Henrietta C. Burns, C. E. Allen, Agnes Allen and J. C. Allen, of Martinsburg, are the incorporators.

The Pierce Coal Company, Sharpsville, Mercer County, Pa., with chief works in Parton County, Mo., was incorporated with \$150,000 capital stock. The incorporators are Frank Pierce, M. L. Pierce, Thomas A. Pierce, A. C. Andrews, of Sharpsville, and A. M. Imbrie, of Pittsburgh.

Fire destroyed the fan house, machine shop and blacksmith shop of the Low Moor Iron Company, Kaymoor, W. Va. The loss is estimated at \$10,000.

The Sutton Pulp & Paper Company, Sutton, W. Va., recently incorporated by W. F. Morrison, Alfred Walker, William H. Lee, E. G. Rider and C. H. Bland, is contemplating the erection of a \$500,000 plant. It is intended to produce 40 tons daily minimum output.

## Detroit

DETROIT, MICH., May 6, 1913.

Reports from dealers indicate that no marked change is shown in the local machinery market the past week, although taken as a whole they are encouraging and the volume of business transacted is larger than that of the preceding week. There has been some call for heavy types of machinery from the automobile industry and lighter classes of tools for the repair shop and garage trade have been in good demand. There is a considerable inquiry from scattered manufacturing interests. Second-hand machinery is fairly active, business from the upstate manufacturing towns being especially promising. There is considerable inquiry pending in power equipment and while the bulk of it is for the smaller units, some fair size equipment is being figured on. The favorable weather the past two weeks has resulted in a rush in building circles and contractors are busily engaged. The good roads campaign which is being carried on extensively in Michigan is resulting in quite heavy purchases of road making machinery.

The steel car repair shops of the Michigan Central Railroad, Central and Livernois avenues, Detroit, were destroyed by fire May 2, entailing a loss of \$50,000, half of which amount represents the value of tools and machinery destroyed. The burned structure will probably be replaced.

The Unwin-Williams Company, Detroit, is the style of a new concern which has been incorporated with \$10,000 capital stock to manufacture coffee-making machines and other specialties.

The Eberts Bros. Company, Wyandotte, Mich., Detroit suburb, has increased its capital stock from \$50,000 to \$100,000, and will construct a new coal dock on the Detroit River, which will be equipped with a steam crane and a considerable amount of other coal-handling equipment. A large storage building will also be erected.

The Regal Motor Car Company, Detroit, has increased its capital stock from \$1,000,000 to \$2,000,000 and it is rumored that extensions to its plant are contemplated.

The Trojan Motor Truck Company, Detroit, has been incorporated with \$10,000 capital stock and will engage in the manufacture of motor trucks. Particulars are not available.

The Detroit Electric Appliance Company, Detroit, manufacturer of automobile lighting and starting systems, has begun the erection of a new plant, three stories, with a floor space of about 25,000 sq. ft. Some additional equipment will be installed.

The plant of the Detroit Forging Company, Detroit, was damaged by fire May 1 to the extent of \$100,000. The company is completing a new factory and was to have vacated the old plant within a short time. The damage to the mechanical equipment is placed at \$35,000.

The St. Johns Portable Building Company, St. Johns, Mich., has acquired land adjoining its present plant and will erect a large addition to its factory.

The Acme Belting Company, Chicago, will move its plant to Benton Harbor, Mich., where a new factory has been secured. The company manufactures canvas belting.

The plant of the Michigan Condensed Milk Company,



Howell, Mich., was completely destroyed by fire May 2, entailing a loss estimated at over \$100,000. It is stated that the plant will be rebuilt.

The Champion Power Sprayer Company, Pontiac, Mich., has been organized by W. H. McCallum, A. L. Arthur and others, to manufacture automobile sprayers and other specialties. A factory is being erected.

The plant of the New Process Steel Company, Marshall, Mich., together with all its equipment, will be sold by the receiver, the Detroit Trust Company, May 14.

The American Mfg. Company, Grand Rapids, Mich., has been incorporated with \$40,000 to build and operate a furniture factory. H. G. Dykehouse is the principal stockholder.

The Goodman Cedar Company, Escanaba, Mich., has been incorporated with \$40,000 capital stock to engage in the lumbering business and operate a saw mill.

The capital stock of the Kawneer Mfg. Company, Niles, Mich., manufacturer of metal architectural specialties, has been increased from \$500,000 to \$1,200,000.

The New Era Canning Company, New Era, Mich., will build a large addition to its plant.

The Superior Vencer & Mfg. Company, Munising, Mich., is increasing its manufacturing facilities and installing additional machinery.

## Milwaukee

MILWAUKEE, WIS., May 5, 1913.

The beginning of May witnessed an increase in the number of unfilled orders on the books of Milwaukee machinery builders, as compared with April 1. The April production was considerably heavier than that of March. The labor supply has decreased, due to the wider demand. The general run of orders continues to be in small lots. There is an increased inquiry for power units for municipalities as well as private corporations, and with the seasonable weather latterly experienced here construction work is progressing and the equipment lists are being closed rapidly. Automobile manufacturers who depend upon Milwaukee for special tools and other equipment are feeling around, as the season of 1914 production is about to open. Some important water power development projects, principally hydroelectric, are being held up awaiting the action of the Legislature, which is considering measures not at all favorable to private power interests.

The Department of Public Works, Milwaukee, closed bids May 3 for the construction of an addition to the North Point pumping station, indicating that the call for bids for the new pumping engine, to cost about \$75,000, will be issued shortly. The contract for the addition calls for completion within 60 days.

Fire in the works of the Universal Machinery Company, Nineteenth street and St. Paul avenue, Milwaukee, April 29, caused damage amounting to \$5000. Reconstruction has been commenced and the entire force will be back at work within 10 days. The company manufactures motor trucks and machinery.

The Madison Plow Company, Madison, has broken ground for two new buildings, one a general shop building, 110 x 200 ft., and the other a warehouse, 100 x 250 ft. The company has been cramped for room for six months and the addition will nearly double the capacity.

Joerns Bros. Company, Sheboygan, placed a contract for a 200 hp. engine as its principal power unit, with the Optenberg Iron Works, Sheboygan. When this unit is installed, about July 1, the company will add more electric motors and other equipment.

C. W. Arnquist of New Richmond, Wis., has been elected president of the Petroleum Universal Power & Heating Company, Minneapolis, Minn., incorporated recently with a capital stock of \$500,000 to manufacture devices and appliances designed by A. W. Swanberg of Minneapolis for application to street lamps, switch engines and other power or lighting units. The location of the proposed plant has not been decided upon.

The Common Council of Menasha, Wis., has voted to purchase a 225-hp. Diesel engine and direct-connected generator for the municipal light power and water plant. The city now operates a 225-hp. Diesel engine and two 75-hp. steam engines.

Arthur and Benjamin Beijer, Stevens Point, have organized a company with \$45,000 capital stock to manufacture hydraulic transmissions of their own design. J. P. Atwell is associated with them in the venture, which will be known as the Beijer Hydraulic Transmission Company.

Thermod Odce, Beloit, Wis., formerly superintendent of the American Gas Machine Company, has made arrangements with the Business Men's League of Albert

Lea, Minn., providing for the organization of a plant in that city for the building of a gas engine of his design.

The Milwaukee Machine Tool Company, Milwaukee, has filed notice of an increase in its capital stock from \$75,000 to \$100,000.

The Royal Ice Machine Company, Grand Rapids, Wis., has been organized with a capital stock of \$25,000 by Joseph Rick. It will build refrigerating machinery.

## Indianapolis

INDIANAPOLIS, IND., May 6, 1913.

The Oakes Pressed Steel Company, Indianapolis, has been incorporated with \$50,000 capital stock. The directors are Warren D. Oakes, W. H. Oakes and James L. Gavin.

The West Lebanon Electric Light, Heat & Power Company, West Lebanon, Ind., has been incorporated with \$10,000 capital stock to furnish heat, light and power. The directors are W. A. Hunter, F. Burge and C. Amos.

The Sonorous Company, Bluffton, Ind., has been incorporated with \$15,000 capital stock to manufacture piano-player actions. The directors are B. K. Settergren, A. Anderson and M. S. Hall.

The Glassco Bottle Finishing Tool Company, Elwood, Ind., has been incorporated with \$12,000 capital stock to manufacture mechanical tools, bottle molds, etc. The directors are R. C. Glassco, A. J. Belymer, Toby Wolf, C. M. Mitchell and A. C. Ratcliffe.

Kirkhoff Bros & McElwaine, Indianapolis, have been incorporated with \$30,000 capital stock to manufacture and deal in plumbing goods. The directors are George F. Kirkhoff, C. F. Kirkhoff and C. M. McElwaine.

The Merchants' Heat & Light Company, Indianapolis, has plans for an addition to its West Washington street plant, of brick and steel construction, 65 x 84 ft., to contain a battery of eight boilers of 500 hp. each. E. Darrow is general manager of the company.

A contract has been signed which will bring to Mars Hill, the new industrial suburb of Indianapolis, the Crawford Locomotive & Car Company, Streator, Ill. The company will occupy about 100 acres in the factory suburb and the plant to be built will be ultimately for 2500 employees. There will be 25 miles of railroad track on the grounds. The company's present plant has a capacity of rebuilding 35 cars a day. The company may go into the building of all-steel freight cars, with its proposed larger facilities at Indianapolis. The company has a year's work on hand, with its present capacity. It will begin moving its plant as soon as a switch is run into the Mars Hill site.

The Clark Motor Works, Shelbyville, Ind., has been sold to Maurice Wolfe of Chicago, who will be at the head of the reorganized company. The plant has been in the hands of receiver Herbert C. Jones.

The National Metals Company, Indianapolis, has been incorporated with \$125,000 capital stock to deal in metal and wood products. The directors are James F. Lindley, Jr., M. McKetrick and Ross A. McKinney.

The Duncan Electric Mfg. Company, La Fayette, Ind., has awarded a contract for the erection of a four-story addition to cost \$30,000.

## The Central South

LOUISVILLE, KY., May 6, 1913.

May has started off well in the local machinery market. Many more prospects are in the field now than heretofore, indicating that the machinery men will be able to pile up a good total in the matter of sales for some time to come. Ice machinery manufacturers report having received numerous orders, and the boiler trade is also good. Motors are in excellent demand, the electrical equipment men report and woodworking and other special lines are showing strength. All told, conditions are much more satisfactory than they have been.

The Louisville Lead & Color Company may install new electric motors, as it is contemplating changing from direct to alternating current.

Hiatt Bros. and H. J. Scheirich, Inter-Southern Life Building, Louisville, are contemplating the erection of a six-story apartment house which will consume a large amount of equipment. There will be two passenger and one freight elevator, electrically operated. Motor driven fans will provide ventilation, and a small ice plant will probably be installed, as well as about 75 hp. in motors for various purposes.

Ballard & Ballard, Louisville millers, may purchase motors for the operation of machinery to be used in

packing flour in cartons. G. A. Breaux is vice-president.

The Crown Motor Car Company, Louisville, is being formed with \$500,000 capital stock for the manufacture of automobiles. The company will establish a plant, for which the site is now being selected. V. F. Lambert is president, N. V. Lambert vice-president, and H. Lambert secretary-treasurer.

The Standard Sanitary Mfg. Company will erect a new building for enameling purposes at its Louisville plant. Six additional furnaces will be installed. Loomis & Hartman are the architects.

The copperworking concern of Hoffman, Ahlers & Co. has been succeeded in Louisville by Ahlers & Gregoire. The former company is continuing to operate under that name in Cincinnati.

The Dow Wire & Iron Works, Louisville, is installing a bending room which will be used for the metal bed department, which it is reported is expanding considerably.

The Brandes Fireplace Heater Company, Henderson, Ky., is incorporated with \$25,000 capital stock. R. A. Harness is president; A. H. Abbott, vice-president; W. C. Cooper, secretary, and Don P. Pritchett, treasurer. The company is contemplating the erection of a plant.

Grigsby & Co., Bardstown, Ky., are building a garage which is to include a well-equipped repair department. Reginald Grigsby may be addressed.

The reform school at Lexington, Ky., which is operated by the county, may be equipped with a manual training department for negroes. Address the county judge.

The Fulton Electric Light & Power Company has amended its articles of incorporation, increasing its capital stock from \$10,000 to \$60,000. Improvements are contemplated.

The Hickman Ice & Coal Company, Hickman, Ky., has changed its name to the Hickman Electric, Ice & Water Company, and increased its capital stock from \$20,000 to \$80,000. Detailed plans regarding extensions will be forthcoming shortly.

Edgar Keith, Buffalo, Ky., will build a large flour mill at Upton, Ky. The plant will have a capacity of 50 barrels a day. The machinery is to be purchased at once.

J. W. Worrick, of the Roemer-Worrick Foundry Company, Bowling Green, Ky., has disposed of his interests in that concern to become general manager of the Hastings Foundry & Iron Works, Hastings, Neb.

The Princeton Electric Light & Power Company, Princeton, Ky., has awarded contract for a new power plant to be located on the line of the Illinois Central Railroad. The boiler room will be 40 x 50 ft. and the engine room 35 x 70 ft., with a stack 85 ft. The company has recently been given a new franchise, and is prepared to make considerable enlargements.

Charles E. Gibbens has purchased the plant of the Eagle Castings Company, Winchester, Ky., which has been in process of liquidation.

The Auburn Mills, Auburn, Ky., will install an electric light plant. A franchise has been secured from the town for a street-lighting system.

The boiler of George Rowsey, operating a sawmill near Danville, Ky., was recently destroyed by an explosion. New equipment will be purchased at once.

The Illinois Central Railroad, with general offices in Chicago, is considering the establishment of repair shops at Princeton, Ky. Decision will be made in the near future.

The Cincinnati, New Orleans & Texas Pacific Railway Company, with general offices in Cincinnati, will enlarge its repair shops at Somerset, Ky., it is reported. Machinery to be installed includes electric welding apparatus, a 40-ton electric crane and additional power equipment.

Fire destroyed the flour mill of Eberts & Bro. in Jeffersonville, Ind., opposite Louisville, the loss being \$100,000. It will be rebuilt, though probably not in Jeffersonville.

Paris, Tenn., has approved a bond issue of \$65,000 for the purpose of improving the electric light plant, etc.

Jasper Hooper, general manager of the Star Block Mills, Franklin, Tenn., is planning the establishment of a plant for the manufacture of shuttle blocks in Nashville, Tenn. Power and woodworking equipment will be needed.

Plans for the establishment of a factory for the manufacture of furniture are being made by Nashville, Tenn., retailers. Percy Sharpe, of the Sharpe-Wherry Furniture Company, is one of those interested.

The Bay Minette Turpentine Company, Bay Minette, Ala., will equip a cooperage shop to manufacture barrels for turpentine stills in that locality.

The Citizens' Lumber Company, Parkersburg, W. Va., has plans for a large mill to take the place of the present plant.

## St. Louis

St. Louis, Mo., May 5, 1913.

No large business was closed in the week or is in sight, but at the same time there is a sufficient aggregate of small business to keep the dealers pretty generally in a good frame of mind. Collections are reported fair.

The Cleo Chemical Company, St. Louis, has been incorporated by Frank Mullish, W. B. Young and John H. Wolf to equip a plant for the manufacture of chemical products.

The St. Louis Crayon Company, St. Louis, with \$15,000 capital stock, has been incorporated by Henry Rohrbach, John W. Brandon, John Stender, Paul O. Sommer, Frank Blette, Charles A. Klute and Joseph L. Welsh, to equip a plant for the manufacture of crayons, etc.

The Northwestern Construction Company, St. Louis, has been incorporated with \$50,000 capital stock by M. F. Hoboy, Frank J. Nack and Joseph W. Capstick, to do a general contracting and construction business.

The Barbour Metal Boat Company, East St. Louis, has been incorporated with \$15,000 capital stock by George C. Barbour, Harry C. Wakefield and Charles P. Whitebread to equip a plant for the manufacture of metal motor boats, etc.

The Plant Cereal Company, St. Louis, with \$20,000 capital stock, has been incorporated by William Grafeman, George C. Dyer, Theodore Lange, S. J. Davis and others to equip a plant for the manufacture of cereal products.

The Kurusal Chemical Company, St. Louis, with \$50,000 capital stock, has been incorporated by W. J. Hennessy, W. J. Griffin and Russell I. Folsom to equip a plant for a general chemical and drug manufacturing business.

The Great Western Portland Cement Company, Kansas City, Mo., has been incorporated with \$150,000 capital stock by Louis L. Seibel, Benjamin B. Foster and Frank D. Treckell to equip a plant for the manufacture of Portland cement.

The Alexander King Stone Company, Kansas City, Mo., has increased its capital stock from \$10,000 to \$30,000 for the purpose of increasing its mechanical equipment.

The Metal Case Broom Company, St. Louis, Mo., has doubled its capital stock for the purpose of increasing its factory equipment.

The new seven-story factory and office building of the Century Electric Company, St. Louis, work on which has begun, will be equipped with electrical power, independent heating system, and a battery of elevators.

The Trusty Tool Company, Robinson, Ill., has been incorporated with \$15,000 capital stock by Thomas S. Apgar, Orlin H. Kirk and George M. Russell to equip a plant for the manufacture of tools.

The Landis Machine Company, St. Louis, large manufacturer of shoe machinery, has completed plans for the construction of an addition to its plant with considerable new equipment which will increase its capacity about 50 per cent.

The city of Walnut Ridge, Ark., through J. H. Crites, is seeking additional factories, including furniture and chair plants. The city is also preparing to construct waterworks plant and a sewage disposal system.

The Tschudy Hardwood Company, Kansas City, Mo., and Memphis, Tenn., and the Ozark Cooperage Company, St. Louis, have jointly purchased timber land in Poinsett County, Arkansas, and will develop it, constructing lumber and stave mills near Harrisburg, Ark. They will also build a standard gauge railway.

The brick plant at Gaither, Okla., has been bought by C. F. Lutes, of Oklahoma City, who announces intention of installing additional machinery.

The Pontoto Brick, Tile & Stone Co., Roff, Okla., has been incorporated by B. F. McKelvey of Roff, W. W. Kitchens of Ravia, Okla., and others, and will equip a plant shortly.

The Cement Stave Silo Company, Kansas City, Mo., with a plant under way at Blue Valley, will equip for



the manufacture of cement silo staves with steel reinforcement.

The Colony Farmers' Co-operative Gin Co., Colony, Okla., with \$10,000 capital stock, has been incorporated by J. M. Hardesty, G. W. Bartgis and T. J. Kendrick to equip a cotton ginnery.

The Fillmore Gin Company, Fillmore, Okla., with \$8,000 capital stock, has been incorporated by J. A. Kirkpatrick, J. R. Chaney and O. T. Allison and will equip a cotton ginnery at once.

The Rose City Cotton Oil Company, Argenta, Ark., has completed its plans for the reconstruction of its recently burned plant. The new cotton oil mill will cost \$125,000 with equipment.

The Arctic Ice & Refrigerating Company, Enid, Okla., will equip its plant for refrigeration purposes at a cost of about \$38,000. It will store meats, produce, etc.

The Underwriters' Oil & Gas Company, Tulsa, Okla., has been incorporated by W. L. Alexander, S. Barth and C. T. Ingalls, all of Oklahoma City, to equip oil property which they control.

The St. Louis Dressed Beef Company, St. Louis, will remodel and re-equip its cooler plant at a cost of about \$10,000.

The Elyna Petroleum Producing Company, Bartlesville, Okla., with \$30,000 capital stock, has been incorporated by James A. Veasey, J. O. Mera and L. G. Owen to equip oil property controlled by them.

The Weil Packing Company, Little Rock, Ark., will build a cold storage plant in addition to its present equipment.

The Kentucky Land & Timber Company, of which Robert Carnahan, of Louisville, Ky., Thomas R. Gordon, M. P. Kelly and others are owners, will equip sawmills and a railroad to develop 25,000 acres recently bought in Arkansas.

The W. R. Pickering Lumber Company, Kansas City, Mo., recently reported incorporated, is building a plant at Haslam, Tex. (not a postoffice). The capacity is to be 250,000 ft. daily. The plant will also include a 300-kw. generator, boilers, dry kilns, planing mill machinery, etc. The total cost will be about \$750,000.

Equipment for a sawmill of about 20,000-ft. daily capacity will be bought by J. M. Griffin, of Noma, Miss.

The Sleepy Hollow Mining & Development Company, Joplin, Mo., has been incorporated with \$20,000 capital stock by Joplin zinc landowners to develop their property.

Ziler Bros & Co., Miami, Okla., are reported as having plans to build a tailing mill in the Joplin, Mo., zinc district.

A mill is to be built by the Lula V. Mining Company at Spring City, Mo., R. F. D. Joplin.

The Pine Products Company, represented by Samuel C. Houston, of Houston, Tex., is reported as having plans for a pine products plant at Bogalusa, La.

The Picher Lead Company, Joplin, Mo., is reported to have plans for an addition to its red lead plant.

The Premium Glass Mfg. Company, Sapulpa, Okla., with \$50,000 capital stock, has been incorporated by George F. Collins, J. L. Crothers and J. W. Collins and will equip a plant at once.

The city of Broken Bow, Okla., will construct waterworks to cost \$60,000 under a bond issue which will be revoked, the previous issue having been declared illegally voted before the bonds passed.

A waterworks plant is to be built at Ville Platte, Ark., by the town authorities who have the matter in charge.

A waterworks plant to cost about \$30,000 is to be built at Highlandville, Mo., the town clerk having the matter in charge at present.

A plant with a capacity for the manufacture of 250 dozen handles will be equipped at Little Rock, Ark., by J. V. Berry of Paragould, and S. R. Harned of Jonesboro.

The Grismore-Hyman Company, Memphis, Tenn., is building and will equip a slack barrel cooperage plant at Parkin, Ark.

At Kansas City, Kan., an election is to be held June 24 to vote upon an issue of bonds in the amount of \$250,000, the proceeds of sale to be used for the building of a lighting plant.

The city of Rayville, La., is reported to be inviting bids for a franchise for the establishment and operation there of an electric light and water works system.

A municipal electric light plant is to be built at Elmo, Mo., under the direction of J. S. Wool, a bond issue having been authorized.

## Texas

AUSTIN, TEXAS, May 3, 1913.

General improvement in business conditions is reported from all parts of the state. Crop prospects are fine and the machinery and tool trade views the situation from a very optimistic standpoint. Indications point to another unusually good year. The midsummer trade activity promises to exceed that of last season. Just at this time much is being done in the erection of cotton gins, cotton seed oil mills and compresses. In western Texas generous rains have fallen and the increase of cotton acreage has created a demand for many additional gins.

J. W. Malone of Decatur will construct a system of irrigation and install a pumping plant near Fort Clark.

H. B. Harmon and O. A. Sims of Beeville have been granted a franchise by the City Council of Floresville to erect an electric light and power plant at the latter place.

Hillburn Bros. of Dalhart will establish a plant at Wichita Falls for the manufacture of cotton gloves.

The Chamber of Commerce is promoting the erection at Weatherford of a plant to manufacture peanut oil and butter.

The Farmers' Cotton Oil Company will erect a cotton seed oil mill at Bardwell at a cost of about \$50,000.

The Panhandle Silo Company will erect a plant at Plainview for manufacturing wooden silos.

The Seguin Canning Company will erect a fruit and vegetable canning factory at Seguin.

The Southern Traction Company will erect large shops at Dallas. Plans for the proposed buildings are now being drawn.

The Gillespie County Gold Mining Company has been organized at Llano to develop a gold ore prospect in Gillespie County. The incorporators are N. J. Badu, J. B. Buie and A. F. Moore. Considerable machinery will be installed.

The Cotulla Reservoir & Irrigation Company has completed surveys for two large water storage reservoirs and an irrigation system it will construct upon the Nueces River near Cotulla. About 50,000 acres of land will be placed under irrigation. Pumping plants will be installed and the water placed in the canal system by that means.

The Yorktown Light & Ice Company will install additional equipment in its electric light plant at Yorktown.

W. L. Moore and associates are interested in the erection at Big Wells of a cotton gin and a canning factory.

The Farmers' Gin Company will install new machinery in its cotton gin at Berclair.

W. P. Borders is erecting a cotton mill near Westfield.

Stuard & Co. will install new machinery in their cotton gin at Pendleton.

The Angleton Gin & Power Company is erecting an electric light and power plant at Angleton and will also put in an ice plant.

J. D. Hicks will erect a plant at Orange for manufacturing gas engines.

Plans are being prepared for an electric light and heating plant that will be erected at Dallas to supply the county court house and jail and other public buildings with light and heat.

Hunt & Troutman will construct a system of waterworks at Appleby.

The National Trust & Savings Company, Salt Lake City, Utah, has taken over the Canfield irrigation project near East Las Vegas, N. M., and will complete the dam and canal system. The cost of the proposed works is about \$500,000, it is stated. Lloyd Sigler is vice-president and general manager of the company.

The Atchison, Topeka & Santa Fe Railway has acquired a site at Albuquerque, N. M., for extensive shops which it will erect.

The St. Louis & San Francisco Railroad Company is having plans prepared for the construction of a system of irrigation which will water about 250,000 acres, according to the statement of A. S. Greig, St. Louis, Mo., vice-president and assistant to the president of the company. Engineers recently finished the preliminary survey of the property and the construction work will soon be started.

The Nacozari Consolidated Mining Company will erect a 100-ton ore reduction mill at its Pilares mine near Nacozari, State of Sonora, Mexico. John Alexander is president.

The Gulf, Colorado & Santa Fe Railway has classified the appropriation of \$797,670.30 that has been made



for improvements to its system in 1913 as follows: Right of way and station grounds, \$745.50; bridges, trestles and culverts, \$28,560.87; sidings and spur tracks, \$180,683.99; grade revision and protection of banks, \$90,389.25; fencing right of way, \$21,468.82; interlocking and other signal apparatus, \$24,012.14; telegraph and telephone lines, \$22,029.12; station buildings and fixtures, \$29,323.10; shop machinery and tools, \$35,672.17; shops, engine houses and turntables, \$109,662.45; water and fuel stations, \$23,559.21; miscellaneous structures, \$24,404.84; rails, \$79,855.99; equipment, \$346.26; tie plates, \$96,513.60; increased weight of frogs and switches, \$30,442.99.

It is authoritatively announced that the General Electric Company has taken over the proposition of constructing an interurban electric line between Artesia and Cloudercroft, N. M. It is planned to erect a hydro-electric plant at the falls on the Penasco River and to operate the road by means of this power.

## The Pacific Coast

SAN FRANCISCO, CAL., April 29, 1913.

Machine tool merchants generally report business rather quiet, though a few have taken some very satisfactory orders. Nothing further has developed in the local garage trade, however, and country orders in this line, though numerous, are individually small. The larger machine shops, while fairly busy, are buying little new equipment. Salesmen who have recently been South report no important business, but found the various iron works at Los Angeles extremely busy, owing largely to building activity.

Building operations are increasing in this city and considerable machinery is required to handle materials, as well as for the elevator and other mechanical equipment of the buildings. It is expected that drilling equipment will be wanted by the contractors on the Stockton street tunnel. Contractors' machinery in general is probably the most important feature of the season in California, as contracts are now coming out for a number of waterworks and sewer systems, electric railroad and power lines are being extended in many directions, and nearly a dozen hydroelectric developments of some importance are in various stages of construction. With dry weather coming on the demand for centrifugal pumps and other irrigating equipment is more general, and there is considerable business in oil pumping machinery. The local woodworking plants are still inclined to hold off, but if building keeps up a good movement of woodworking machinery is expected.

Among the tools recently purchased by the Southern Pacific Railroad were an 1100-lb. single-frame steam hammer, a 30 x 30 in. x 8 ft. motor-driven Ohio planer, and a turret lathe, the order for which was placed with the Eccles & Smith Company.

Tool dealers have been looking for an inquiry for the Southern Pacific shop at Tucson, Ariz., but nothing has yet been done on the buildings, and there is no immediate prospect of tool business from that source.

It is reported that construction will be started at Wilmington, Cal., about July 1, on the new steel plant of the California Industrial Company, which recently authorized an increase of capital stock from \$500,000 to \$1,500,000.

Fresno County, Cal., is taking figures on a central power, light and heating plant for the county buildings, to cost between \$20,000 and \$30,000.

Equipment required by the city of Los Angeles for excavating a hill and filling a tract of tide land includes four 18-ton locomotives, 40 dump cars and 12 flat cars. Bids for the locomotives will be received May 23.

The Woodland, Cal., Bottling Works is preparing to put in a lot of new ice and bottling machinery.

The Iowa Furnace Company has been incorporated with a capital stock of \$25,000 by W. H. Calhoun, G. L. Wilber, C. R. Munson, A. C. Black and S. L. Wedgewood. It will build a plant at Santa Ana, Cal., for the manufacture of a heating furnace designed by Mr. Calhoun.

The Chicago Pneumatic Tool Company, through its local office, has just taken an order for a 50-hp. 2-stage compressor and drill plant for Tonopah, Nev., and a 50-hp. single-stage compressor for National, Nev.

Promotion work has been started for a cotton-seed oil mill at Calexico, Cal.

The purchase is announced of five acres of land in South San Francisco by the Prest-O-Lite Company, and plans have been received for a factory to cost about \$50,000.

The city of Los Angeles has taken figures on 10 hydraulic cylinders and stems for sluice gates.

It is reported that the California Woolen Mfg. Company will build a factory at Long Beach, Cal., at a cost of about \$150,000.

The Keren Motor Truck Company, Los Angeles, recently organized, is preparing to add a new building and install new automatic machinery.

## Eastern Canada

TORONTO, ONT., May 3, 1913.

The Canadian Government awarded the contract for the machinery for dredges at the Hudson Bay terminal to F. H. Hopkins & Co., Montreal, for \$13,500.

The London Pressed Brick & Tile Company, Ltd., Robinson Hall Chambers, London, was granted a charter by the Dominion Government to manufacture and deal in building material of all kinds. Among the directors are J. M. McEvoy and Calvin S. Parker.

The Canadian Gazette contains letters patent incorporating Canadian Allis Chalmers, Ltd., Toronto, with power to take over the business of Allis Chalmers Bullock of Montreal, machinery manufacturers. The capital stock of the new company is \$500,000.

The Polson Iron Works, Toronto, will build for the Canadian Government a hydraulic suction dredge, equipped with wireless apparatus, a complete machine shop, including lathes, planers, drills, air compressors, a set of pneumatic tools, smithy, a crucible for the manufacture of brass castings, etc. It will be one of the most complete on the continent, and will cost \$250,000.

The by-law for the granting of \$25,000 and a free site to the Snedcor-Hathaway Shoe Company was passed at Tillsonburg. The company has conducted a successful business in Detroit for 30 years and will now move its factory to Tillsonburg.

A number of well-known Brantford men are making application to the Ontario Legislature for a charter for \$50,000 to start a gray-iron foundry there. Carl Smith, who recently resigned from the position of purchasing agent of the Pratt & Letchworth Company, and Mr. Rowell, of the Auto-Cycle Company, are especially interested.

The mill of the Smith Lumber Company, Woodstock, N. B., was destroyed by fire. The loss is about \$10,000, partially insured. The company will rebuild at once and expects to have the new mill running in two months.

The sawmill at Nolalu, Ont., owned by Jacke Jones, was destroyed by fire. He intends to rebuild on the old site at once.

Two English manufacturing companies are establishing important branches in Canada. These are Henry Hope & Sons, of Birmingham, makers of steel window sash, etc., and Marshall, Sons & Co., of Gainsborough, engineers and boiler makers. The latter firm is establishing its branch at Saskatoon, Sask.

The Canadian Steel Specialty Company, manufacturer of steel furniture, Gravenhurst, will locate at Grimsby, Ont. The company is a going concern and the only one of its kind in Canada. It asks the town for a loan of \$10,000. The Van Dyke cement building on Victoria avenue will be purchased for the new company.

The Renfrew Electric Mfg. Company has been incorporated with a capital stock of \$50,000, and chief place of business to be at Renfrew, Ont., to manufacture, buy, sell and otherwise deal in electrical machinery, appliances, specialties and supplies of all kinds; and to carry on the business of machinists and foundrymen.

The American Light, Heat and Power Company of Canada has been incorporated with a capital stock of \$150,000, with chief place of business to be at Montreal, Que.

The Phoenix Bridge & Iron Works, Ltd., Montreal, has been incorporated with a capital stock of \$1,500,000, to buy and sell iron and steel and other structural material, and to fabricate, manufacture and otherwise prepare the same for use in the construction or erection of buildings, etc.

The Lindsay Machine & Tool Company, of which P. N. F. Spies is the manager, has located at Lindsay, Ont. The company will manufacture all kinds of special machinery.

Plans are being prepared for an addition to the Canadian Buffalo Sled Company's factory at Preston, Ont. The building will be 60 x 60 ft., two stories, of concrete construction. Work will be commenced as soon as material can be secured.

Fire in the James Gillies woodworking mills caused

a loss of \$10,000. The rebuilding of the plant will commence as soon as possible.

The Temiskaming & Northern Ontario Railway has prepared plans for new shops and terminal facilities at North Bay, Ont., calling for an expenditure of \$350,000. The contracts will shortly be awarded.

Charles R. Tuson has purchased the plant of the Canadian Commercial Motor Car Company on Goyeau street, Windsor, Ont. It is expected that the plant will be enlarged in a year or so.

It is officially announced that the Maritime Motor Car Company, St. John, N. B., has joined forces with the Palmer-Singer Mfg. Company of New York. The large and fully equipped plant of the Maritime Company will be used to adapt the type, design and material of the Palmer-Singer Company to Canadian requirements.

The Lake Erie & Northern Railway will build machine shops and other car repair buildings at Brantford, Ont.

Bids are being received for the construction of the plant to be built by the National Cash Register Company on Christie street, Toronto. Page & Warrington, of that city, are furnishing specifications and taking the bids.

The B. F. Goodrich Rubber Company, Akron, Ohio, contemplates the building of a Canadian branch plant near Niagara Falls, Ont. It is stated a site has been purchased near Chippewa just above the falls upon which an extensive plant will be erected, to be completed within a year, and which it is said will give employment to about 1800 men.

The Canadian General Electric Company is receiving bids for construction of an addition to its transformer building at Peterborough, Ont.

The Pink, McVeity & Blackburn Company, Ltd., Toronto, has been incorporated with a capital stock of \$150,000 to manufacture and deal in automobiles and other vehicles. John F. Orde, Montague G. Powell and Norman W. Lyle are the directors.

## Western Canada

WINNIPEG, May 2, 1913.

There is decidedly a more optimistic tone in Western Canada industrial circles. Recent announcements indicate that manufacturers are going ahead with the improvements and extensions of plants that they have been contemplating for some time, and in regard to which they had temporarily hesitated owing to the general financial stringency. It is apparent now that the banks and other financial institutions of the country are quite capable of taking care of the requirements of regular business enterprises, and practically the only people whose operations are curtailed by the scarcity of money are the real estate speculators. It is announced that parties of British and German manufacturers will tour Canada shortly, with a view to investigating the opportunities offering here in the manufacturing line. The local machinery houses report volume of business increasing steadily as the season advances.

The industries committee of the Calgary, Alberta, City Council has been recently considering the establishment there of a municipal foundry. No definite decision has yet been arrived at.

The City Council of Brandon, Man., has decided to spend \$200,000 this year on waterworks improvement.

The Western Electric Mfg. Company, Ltd., Winnipeg, is a new concern incorporated with a capital stock of \$150,000. The directors are R. R. Boyer, J. F. Kennedy, Carl Jaegar, J. R. Sutherland and F. C. Kennedy.

A representative of the Western Canada Flour Mills Company, Ltd., Winnipeg, has been in conference with the secretary of the Vancouver, B. C., Board of Trade in reference to securing a site there for the erection of a flour mill. No definite announcement has yet been made.

It is announced that the Empress Mfg. Company, Vancouver, B. C., has purchased a site at Mission City, on which it will erect a large fruit canning factory.

The Canadian Explosives, Ltd., Sidney, B. C., has been given permission by the British Columbia authorities to erect a factory on James Island.

Davison & Smith, the Fort William, Ont., elevator and milling firm, has announced that it will build a cleaning elevator and a flour mill at Port Coquitlam, B. C., the new western terminus of the Canadian Pacific Railway. The elevator will have a capacity of

60,000 bushels, and a drying capacity of 10,000 bushels. The capacity of the mill will be 2500 barrels daily.

The town of Weyburn, Saskatchewan, will install a sewage filtration plant this summer. The secretary-treasurer is J. D. Murray.

With the idea of establishing a paper and straw-board plant costing approximately \$250,000 at a location in Edmonton, Alberta, J. W. Simpson, of Worcester, Mass., is visiting Edmonton. He stated that he is fully prepared to establish a plant, should the location and raw material be available.

The Red Cliff Lumber Company's sawmill on Roche Point, Vancouver, B. C., has been purchased by the Vancouver Lumber Company, and work which has been stopped there for some time will be resumed immediately, according to E. C. Knight the manager.

A flour milling plant to cost the owners \$750,000 is the latest industry for Port Arthur. The mill will have a capacity of 2500 barrels per day. An elevator for cleaning and storing will be an adjunct to the mill.

It is stated that in anticipation of the completion of the Canadian Northern line to Montreal within a year the company is planning the immediate erection of six new large grain elevators between Port Arthur and Winnipeg and another series of elevators between Edmonton and Winnipeg.

The Saska Mfg. Company, an implement manufacturing company, with a capital stock of \$200,000, will locate at Fatoria, Sask., and will be operated by P. S. Houghton.

J. F. Diefenbach, of Red Wing, Minn., has had plans prepared for the construction of a \$100,000 flouring mill at Fatoria, Sask., and will start laying the foundation at once. All machinery used will be electrically driven and of most improved type. At the start the mill will have a capacity of 600 barrels per day, the building, however, will be big enough to permit the increasing of the capacity to 1500 barrels per day.

## Government Purchases

WASHINGTON, D. C., May 5, 1913.

The Bureau of Yards and Docks, Navy Department, Washington, will open bids May 31 for a coaling tower and alterations and improvements to the coaling plant at Boston, Mass. The amount available is \$65,000.

The Commissioners of the District of Columbia, office of the purchasing agent, will open bids May 17 for furnishing one direct-current continuous duty 5-hp. electric motor.

The constructing quartermaster, Fort Sill, Okla., will open bids May 26 for constructing a wooden storage tank and installing motor-driven triplex pump with necessary piping, etc.

The Treasury Department, office of the supervising architect, Washington, will open bids May 28 for a deep well pumping plant for the United States post office, London, Ky.

The Daily Consular Reports, issued by the Bureau of Manufactures, Department of Commerce, contain a number of foreign trade opportunities. Abstracts of these are as follows:

No. 10,837—The street cleaning committee of a large city in England is desirous of obtaining the latest improved machinery for street cleaning and wishes to communicate with American manufacturers of such equipment.

No. 10,839—The large cement manufacturing concern desires to receive catalogues of modern cement manufacturing machinery, quarrying and transporting appliances, with a view to increasing its present establishment.

No. 10,842—The Bureau of Foreign and Domestic Commerce is in receipt of a communication from a foreign business concern stating that it is in the market for machinery to be used in the manufacture of wooden shoe pegs.

No. 10,845—An American consular officer in an European country reports that a company is about to be formed for the extraction of gold from gold-bearing sand. He states that American manufacturers of machinery will do well to write to the company requesting specifications of machinery.

The Bureau of Supplies and Accounts, Navy Department, Washington, opened bids April 29 for furnishing miscellaneous supplies for the navy yards as follows:

Schedule 5314, class 92, one 20-in. patternmakers' lathe, with carriage—Bidder 8, American Woodworking & Machinery Company, Rochester, N. Y., \$500; 60, J. A. Fay & Egan Company, Cincinnati, Ohio, \$558.60; 87, Kemp Machinery Company, Baltimore, Md., \$587.50; 124, Oliver Machinery Company, New York, \$550.

Schedule 5315, class 101, one stone crusher—Bidder 4, Ames Mfg. Company, Chicago, Ill., \$1731; 9, Acme Road Machinery Company, Frankfort, N. Y., \$1355.60; 88, Kennedy Mfg. & Engineering Company, New York, \$1887; 128, Power & Mining Machinery Company, New York, \$1727; 163, Traylor Engineering & Mfg. Company, New York, \$2220.

Schedule 5316, class 102, hoisting machine and controller in elevator, Portsmouth, N. H.—Bidder 7, Albro-Clem Elevator Company, Philadelphia, Pa., \$1600; 123, Otis Elevator Company, New York, \$1975 and \$2743; 161, Salem Elevator Works, Salem, Mass., \$925.

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